The Builder.

No. CCCCXXXVII.

SATURDAY, JUNE 21, 1851.

IN our present number we give a view of the Mediæval Court, in the Great Exhibition, where Messrs. Pugin, Hardman, Myers, Crace, and Minton, have concurred in producing a whole of great completeness, and considerable excellence.* We need scarcely say that the metal work and stained glass (the latter sacrificed by its position) are by Hardman, the stone and wood carving by Myers, the tiles by Minton, the hangings and some of the furniture by Crace, and the design of nearly the whole by Mr. Pugin. Our view is taken from the south-west corner, omitting a case of vestments which somewhat interfered with the other objects. The principal feature brought into view is a stone font, with carved panels, representing the fall of man, the Baptism, St. John preaching in the Wilderness, and the Crucifixion. In the shaft are eight niches, containing figures of the four Evangelists, St. Peter and Paul, St. John the Baptist, and the Virgin Mary. The cover is of wood, arranged to slide into a richly carved oak canopy, an arrangement more novel than satisfactory. Behind is a carved tabernacle, with angels in canopied niches.

One of the best specimens of stone carving which Myers exhibits is the canopied tomb, with a recumbent effigy of a bishop about to be erected in St. Chad's, at Birmingham. Some carved stone chimney-pieces deserve especial praise. Of the wood carving we noted more particularly an oak cabinet with open panels, emblems, and cresting, and a portion of an oak staircase, with the crest of the proprietor arranged to form open work in panels under the handrail.

The metal work, in the shape of lamps, coronæ, fastenings, and ecclesiastical vessels is very excellent, and displays to advantage the skill which has been attained in beaten work.

The stove shown on the left side in order, is an effective though simple combination of iron and pottery.

In the mediæval work from abroad, scattered over the eastern portion of the building, there is less purity of design than is observable in the English works of the same character.

The delicacy of the carving by some of the foreign artists is very great. Annexed we give an engraving of a carved *Benetier*, by M. Knecht, of Paris, which shows the Virgin and Child beneath a rustic canopy formed of vine branches.

Near this are some very clever sketches in clay, by Graillon, of Dieppe. In the nave, close by, are some sculptures in wood and *carton-pierre*, by Cruchet, of Paris, parts of which, those in wood especially, are very good. There are some delicate carvings, hunting-pieces, by Lienard, which deserve notice. In some of the French works, amongst the bronzes for xample, the human figure is scarcely so well drawn as might be expected. There is much, owever, to admire in these bronzes, both in

* See page 391.

CARVED BENETIER — VIRGIN AND CHILD.

design and execution. Rudolphi's works in oxydised silver, are very interesting; and Lerolle's clocks and candelabra are singularly good. Near these is a Gothic candelabrum of large size (12 or 13 feet high), with 32 lights, exhibited by Rouge, which is worth notice. The price of it is said to be 400*l*.

Amongst the best pieces of carved furniture on the English side are the chimney-pieces and bookcases, intended for the side of a library, which are exhibited by Messrs. Holland, from the designs of Mr. Macquoid, architect. We give an illustration of this,* for which, as well as its companion, we are indebted to the *Art-Journal*.† The style is that of the Renaissance, with a free introduction of natural forms. These fittings are carved in walnut wood, inlaid with green and red marbles: the doors are of perforated brass.

The chimney-piece which follows is exhibited by Messrs. Brine, of London, and was manufactured after a design by Mr. T. Sharp. It is carved in statuary marble, with cast metal ornaments electro-gilt, mounted on the pilasters, frieze, and spandrils.

As to previous notices of the Exhibition—we have received letters from various exhibitors complaining of our not mentioning their names. We, of course, exercise a discretion in such matters, and, moreover, do not pretend to point out even all who deserve praise. We may remark here, by the way, that, judging from our correspondence on the subject, although the advantage to manufacturers and others of being mentioned and praised is nothing, positively nothing—not worth acknowledgment,—yet the *omission* of mention of them is a personal affront and a scandalous injury. Alas, poor editors! No praise for the act, but great abuse for the omission. It is the same usually with our brother-architects: not an expression of appreciation for putting the best face on their works, and for not saying what we often could say; but black looks and spiteful remarks for even an omission. However, we must try to bear it, with a shrug for poor human nature.

Returning for a moment to the cements and artificial stones, we would mention, in justice, the specimens of Martin's cement, exhibited by

* See page 390.

† These engravings will serve as examples of the manner in which the *Art-Journal* Catalogue of the Exhibition is illustrated. The second part, just now issued, contains so large a number of engravings, that we may believe "that very few, if any, of the really meritorious and suggestive articles exhibited will be unrepresented in this catalogue."

B. Stevens, on the south wall, and included in Class 30. We have known it for a long time as a useful material.

Ransome and Parsons exhibit various applications of their patent stone, in which the peculiarity is the employment of silica both as the base and combining material. It is described as a collection of particles of sandstone grit, intimately combined with silicate of soda, by which they are held together as by a kind of glass. The materials, consisting of sand, clay, fragments of gravel, marble, &c., with a little pounded flint, are moulded into form by the aid of a solution of silicate of soda, and are then burnt in a kiln at a red heat. The water is thus driven off, and (theoretically at least) an insoluble silicate produced.

There being an intention in the City to devote 5,000*l.* to the purchase of works of art from the Exhibition to decorate some of their public places, we would suggest to the notice of the corporation Mr. Bell's statue of Shakspeare which is at present in plaster, and stands close to the Coalbrook-dale Dome in the west nave. There is no public statue of Shakspeare that we know of in the City, and it is time there was one. This statue especially follows the Stratford bust (which there seems every reason to believe, from its internal evidence, was worked from a cast after death), and twelve or thirteen hundred pounds would finish it, and erect it in bronze, with its pedestal. We do not find that there have been any purchases yet from the English sculpture court. Who will begin?

EXPRESSION IN ARCHITECTURE.*

SOME are of opinion that the beauty of the human face consists entirely of expression; and in truth the charm of an agreeable countenance seems to arise from the capability of the features to reveal mental and moral beauty; and if expression be not the entire, it is at least the soul of beauty. Mere sensuous grace is perhaps as unimportant in architecture, which is little else than a lifeless mass if genius infuse not this spirit into it; while if it breathe the idea of the designer we are enchained by its significance and forget the inferiority or the entire absence, as it may be, of abstract beauty. Volumes of thought and feeling flash from the eye, and the various affections of the mind exert an influence upon the permanent form of the countenance and impart to it their own peculiar characteristics: could we have a better illustration of the diversity of sentiment which should beam from different buildings according to the variety of their original and destined purpose?

Certain it is, we can thus express ideas by form: different forms are suggestive by a natural association of different sentiments; and the architect must not so much aim at abstract beauty as at the conditions of the intended expression. If, for instance, the building be for a gay purpose, he must employ those forms and lines, and that style of composition that will express gaiety. If for a solemn purpose, such a character of design, and such proportions, as will yield a solemn aspect. And this gaiety and solemnity are qualities of the destined use or purpose of the work expressed by the features of the building, as qualities of the mind are expressed by the features of the face. Thus, rough-hewn and boldly rusticated masonry, harsh angular lines, lofty and unpierced walls, will give the ideas of a prison; prison-like strength, combined with palatial sumptuousness of decoration, will characterise a bank; severity of outline and form, a character grave and solemn, of patriarchal simplicity, in which nothing is hidden, intricate, or but partially told, and the absence of all imaginativeness, will distinguish a justice court.

But architectural qualities must not be confounded with moral or metaphysical qualities. We speak of the "smiling aspect of a building," and "the frowning aspect of a building;" but these are figurative expressions: and when we say a building is grave or gay, or mirthful or solemn, we do it by a metaphor. The building has material qualities; the institution which it enshrines or serves, has moral or mental ones; but it is on the analogy between these two classes of qualities which are naturally associated in the mind, that architecture is dependant for its power of expression. Thus we cannot directly or literally express the mirth or pleasure of a ball-room, or its associated ideas of human beauty and grace; but we can express qualities analogous to them,—naturally connected with them,—and will characterise such a building by elegance of form and proportion, graceful lines, softness of light and shadow, and minuteness and delicacy of ornament and detail. The ideas of royalty and power associated with a regal palace, we can only shadow forth by majestic proportions,—by boldness of composition, with which, together with power of light and shade, we secure that dignity which is said to be "the harness of power;" while the idea of earthly dominion finds expression in horizontal composition and wide-spreading dimensions. And what the architect must observe is, that there be an analogical correspondence between the qualities developed by the design and composition of the building, and those emotions of the mind which arise from the contemplation, or belong to the ideas, of its use and destination.

This characterizing of edifices, according to their purpose, is among the highest effects of mind on inanimate matter, and is a more wonderful conversion of stone into "golden visions of thought and feeling" than in sculpture itself, as there is less imitation of nature. It is a source of pleasure, of interest, of edification, of refinement, and a gratification of the innate love of variety.*

The purpose of the entire building should not only be thus expressed, but each ornament should tend to illustrate the nature of the particular part to which it is applied, and partake of its general character and relations. From the particular properties of that portion originate the motives of its design and combinations, while the ornaments must be in harmony with the order of architecture and the general expression of the building. As in grammar, a word or phrase must correspond to the genius and received forms of the language; so in architecture, the parts must harmonize with the total,—the main idea of which must illumine every part of it.

The subject of expression applies to the inside of a building as well as to the outside. External expression is insufficient; unless the whole be adapted to and indicate its use, within and without: unless the idea of its purpose pervade it, as it were, it is not a true work, and the fact will be sure to betray itself, just as with one who shall endeavour to make his face express what he does not feel. We soon, in any case, detect the look that is "put on." The grand secret of eloquence, it has been said, is to be in earnest; and our buildings will be eloquent if we are sincere and truthful in designing them,—while nothing will give satisfaction that is not *thrilled* with the genuine sentiment.

But the use of each apartment in a house should be indicated for its own sake. The ancients dedicated each chamber to the divinity that presided over the use to which it was applied, and decorated it accordingly. A room decorated, for instance, to mirth and enjoyment was so treated that the ornaments and every object had a tendency to excite pleasing and cheerful thoughts, and promote hilarity. Sleep has its emblems, by which to characterise an apartment devoted to that use. The same may be said of festivity, study, literature, art—all have their emblems or associations by which we may indicate dining-rooms, studies, libraries, galleries of art, &c. For many of these there would be no impropriety in drawing upon the mythology, the Apollo, Morpheus, the Muses, and other beautiful conceptions of which might yield us considerable aid in this matter. We do not attach sufficient importance to the embellishment of the interiors of our apartments. Michelangelo, Raphaelle, and other great artists it should be remembered were wall and ceiling painters to their contemporaries. Attention to this subject would secure us more diversity in the interior of our houses—a desirable object. The natural love of variety requires a different form and character of decoration and finish for each apartment, and as much as possible a different view or scene from the windows; a great relief to a confined invalid. This could be done without having Turkish and Indian libraries and boudoirs in an Anglo-classic or Italian house. Chinese drawing-rooms may please children or unthinking persons, but no man of taste could take pleasure in such puerilities. Here it may be observed that, as in the exterior, the appropriate expression and needful variety would be in a great measure gained interiorly, by having the shape and proportion, size and disposition of windows, doors, and other features exactly adapted to the destined purpose of the apartment. This would easily distinguish rooms for pleasure from those for domestic service, as in the latter uniformity has given way to utility, and comfort has been secured, though it may be at the sacrifice of uniformity and other conditions of beauty.

There is a difficulty, I admit, in the characterising of some buildings exteriorly. Obstacles are too often flung in the way of truthful design. Sometimes two different, and almost contrasting, institutions have to be provided for under one roof, rendering suitable expression on the outside of course impossible; as in the case of the Assize Courts and St. George's Hall, Liverpool. Some buildings of single purpose, too, it is difficult to characterise: for a railway station, for instance, it would be hard to define the appropriate style of expression. Yet even here a complete adaptation to its purpose will go far to express its character. A railway being for the transmission of goods and passengers with the greatest possible facility and speed, large sheds are required, large doors both for ingress and egress, gateways for carriages and vehicles of every description, —separate sides for departure and arrival; and these must, in a great measure, distinguish the terminus. And though we could scarcely say what general style of decoration for such a building should be chosen, or what general form and proportions it should have, beyond what utility would demand, yet in the sculptural embellishments a good deal might be done towards indicating its purpose by means of symbols. Rapid flight, speedy change of place, the annihilation of space and time, the unity and amity of distant places, and other associated ideas, might thus find expression. But the difficulty I have admitted to exist is of less frequent occurrence than is supposed: few buildings are similarly circumstanced to the one I have referred to. An ingenious writer, in a recent work on the principles of architecture, has complained, that to distinguish a clubhouse from a mansion is beyond the power of architecture; a truth we must admit, but without the slightest disparagement to the art. He has overlooked the fact that a clubhouse *is* a mansion only for a larger family, and that architecture is not called upon to make a difference where no difference exists. A clubhouse is not a public, but a private, building,—for a private society; where a gentleman can have the comfort and accommodation of a private house, just as a cottage,

* See p. 326, *ante*.

* This love of variety in the human breast requires that dwelling-houses should differ in their character from each other;—an arrangement further dictated by the analogy of nature in reference to their occupants. They should express "domestic," all of them, as nature expressed "man" in the form and face of the human subject; but they may do this without being all alike. If architects would free their minds from unnatural shackle and undue precedent, we should have as great variety of houses in our streets as of casts of countenance,—a great relief to our monotonous "town-imprisoned" life. This diversity of aspect, form, and character would not be without its moral effects. A man's love of home, which is the parent of many virtues, would be stronger when his house possessed a proper individuality, a distinct character. When it is different from all other houses and homes, it must make a greater, a stronger impression on his fancy and imagination, and, through them, on his feelings.

a villa, or a mansion is for the use of a family; and it *is* as far as the public are concerned a private house, or mansion; and the passing stranger need not know that it is anything else: the expression of "mansion," therefore, is not only what the clubhouse will naturally assume, it is really the expression it should have.

But almost every building that has a distinct purpose may have its distinct and corresponding expression,—is susceptible of receiving allegorical or other illustration of its purpose, so as to indicate that purpose; if, in the first place, it be truthfully adapted, and if the architect has the requisite mastery over the resources of the art. If a Gothic church in its perfection is a petrifaction of religion, a truly designed college will be a similar embodiment of literature; a palace, of royalty; an exchange, of commerce. Beauty, however, is not incompatible with any, even with the needful character of a prison, which may suggest ideas of durance and gloom, yet display general forms and proportions on which æsthetic feeling has been exercised. Guided by analogy,—a natural association of ideas,—we may find abundant means of giving at least a general tone to every edifice, in harmony with its use; among which may be enumerated the arrangement, size, and character, as simple or decorated, of doors and windows: public buildings, not much divided internally,—consisting chiefly of one great apartment for a large assembly of people, such as churches, chapels, public schools, theatres, concert halls, should have large and expansive doors of entrance, which would not only be convenient, but would assist in characterising them, as such doors would be suggestive of the idea of extensive ingress and egress of people. In places of worship in particular the entrance-doors should be prominent, rendered by ornament conspicuous and inviting, and much wider then they generally are, in order to avoid unseemly thronging and disorder during the discharge of a congregation. Many instances of insufficient means of egress might be cited, causing the exercise of devotion frequently to end with a scene too much resembling a Bartholomew fair. Windows are susceptible of great beauty, great copiousness, and truthfulness, and nice inflexion of significance; but in a religious or other building where a solemn or sublime effect is contemplated or sought to be obtained, windows might with great propriety be omitted, or confined to internal courts or gardens, leaving the exterior effect to those grandest of architectural features — the colonnade and dome. The dome contributes much to palatial dignity, and is expressive of the loftiness and breadth that should characterise great national purposes: having its type in the sublimest of all earthly spectacles—the firmament,—it can never be surpassed by any feature of any style as an element of grandeur. It has assuredly never been so applied as to fully exhibit its intrinsic beauty in modern European design.

Towers, though no longer needed for defence, are useful in expression—they signify strength and durability, and may be used to indicate a purpose that is deep-laid in our nature, paramount and indestructible. Colonnades are indispensable to the production of the more elegant and magnificent qualities. Gables, roofs, and chimneys are not to be forgotten or neglected. Every necessary part or feature may become a valuable element of expression and power. Order and style of architecture are means of expression: we are no more bound to one style than to one of the ancient orders of architecture. One is generally better for indicating a given purpose than another. I believe that one indissoluble chain unites all true styles of architecture wherever they have been developed—which are but a harmonious variety of one type. Those who suppose that only the picturesque Tudor will be a favourite in England for domestic purposes, forget the flexibility of the human mind.

Rustication must also be considered as architectural language; and the prohibition of its use would be an unnecessary and irrational limitation of the means of variety and significance. Rustics were much used by the Romans among whom they were chiefly devoted to the grottoes of the rural deities; and among us they may be made means of beauty and power. They give vitality to a wall or pier, and are susceptible in themselves of many shades of expression. They secure relief to adjacent pilasters, and give brilliancy, and delicacy, and value—by means of contrast—to the upper portions of edifices, when employed in basements, to which, as they suggest ideas of strength, they are peculiarly fitted. If stones can be put together in a beautiful or expressive manner, and that they can be and have been none I think will deny, there appears to me no harm in making that manner so prominent as that attention will be drawn to it.

The character of a building is dependant on the choice of material employed, whether brick or stone; or its description, as texture, colour, quality; and its disposition, or arrangement. Quality of workmanship is also something towards indicating a building's destination. Character may be modified by the manner of executing details, individual mouldings, and other members. Purely geometrical ornament is expressive and poetic, and presents a wide field for imagination: an advantage of such decoration is, its not being seen elsewhere. We may have forms by drawing upon geometry perfectly unique, that do not exist entire in nature; and a new creation, so to speak, is thus called up—

"——— An independent world,
Created out of pure intelligence."

All purposes of buildings cannot be expressed by equal beauty. The comprehensiveness of our nature enables us to embrace every shade of character and every facis of beauty, and fits us to sympathise with truthful manifestation of thought and feeling wherever seen. The arrangement, as well as the choice and design of ornaments, is an important point. Concentration is an element of power, but whether ornament be concentrated on particular and important features, or dispersed over the whole façade, depends upon the invariable laws of composition and design, and the influence of the idea that seeks to be expressed. The two sister arts of Painting and Sculpture in their higher manifestations are also among the architect's due resources for characterising his productions; for statuary, bassi relievi, or pictures, when properly applied to the embellishment of architecture, are part of the building, which would be incomplete without them, and therefore they are architectural members or features, in not too broad a view of the art: used as far as they are demanded by the architect to carry out his idea; they are architectural embellishments; part of the language of the art. Whatever else Painting and Sculpture may claim to be, they are handmaids of Architecture: one of their offices is to administer to Architecture: they are both something apart from this ministry—something on their own account,—but assuredly that is one of their provinces: they are the architect's auxiliaries, means of expression and power which he has a right to avail himself of in giving the higher tones of expression to his design. All ceiling, mural, and other paintings introduced into the different apartments of a public edifice,—all sculptural subjects, bassi relievi, or other works, placed interiorly or exteriorly, should be so chosen and adapted as to further set forth its character and purpose; and if they be so chosen and harmoniously associated with the building, and illustrative of its use, they may, I think, be considered as architectural ornaments; as no less a part of the whole than a modillion or dentil of the cornice. Sculpture originated in combination with, and in subordination and subserviency to, Architecture; and the secret of the great success of the Greeks, as also of the mediæval builders, may be found, I think, in the assistance which each art rendered to the other,—their union for the purpose of giving greater force and significance, like the different organs of life, which, when united, to borrow a simile, expressed the idea no single part could represent.* S. H.

* To be continued.

THE GEOMETRICAL PRINCIPLES OF BEAUTIFUL FORMS.

On 6th inst. Mr. Wyndham Harding delivered a lecture at the Government School of Design, Somerset House, on Mr. Hay's theory of the geometrical principles of beautiful forms.

Having recently* given an account of Mr. Hay's views we shall at present confine ourselves chiefly to Mr. Harding's own introductory remarks on the subject of his lecture.

The subject of consideration, proceeded the lecturer, is form as appearing primarily in nature and natural objects—trees, flowers, leaves, mountains; and, secondarily, as artistically applied in *sculpture*, the *plastic arts*, and the *arts of ornamental surface design*, disregarding, for the moment, the aid which colour, light, and shade lend to these arts, and confining ourselves to what is understood by the outlines and symmetry of the designs. I will not waste your time by attempting a definition of beauty. I will assume that there are certain objects which, in their form and in the proportion of their parts both to each other and to the whole object, affect the true and refined sense of human sight pleasingly, and may be regarded as fair types of beautiful forms.

Such, for example, is the human figure as generalised in such a statue as the Apollo Belvedere; such are the leaves of plants, especially those which have been widely used in architecture—the Grecian acanthus leaf and the Egyptian lotus.

For architecture we find such objects in buildings such as the Parthenon of Athens, in the moulding of pure Grecian architecture, beginning with the Cygnia Recta Reversa and the Avolo.

In plastic or fictile art, in the vases of Etruria and Greece, such as we see in the British Museum.

It would be easy to extend the list. These objects I assume to be admitted as types of beautiful and well proportioned forms.

In what, then, does the secret of their beauty consist, and how may they, or forms with similar excellent qualities, be reproduced at will? This is the problem the designer has to solve, and which Mr. Hay thinks he can assist him to do on principles so broad and comprehensive as will enable the designer himself in turn to become the creator of forms as beautiful, although original, as those which he is now in despair content to copy.

It is pertinent at this stage of the inquiry to ask, what has been the opinion of the ablest men on this somewhat subtle point. The reply is, that there is a wonderful consistency of view among the most profound physical philosophers of every age; that the principles of beauty in form consist in a certain mode of applying and combining certain simple elementary geometrical figures, and attending, in the disposition of objects and of the parts of objects, to certain simple numerical ratios. On this point I will trouble you with one or two references.

In the well-known passage from the Timæus of Plato, the following expressions occur:—"But when the artificer began to adorn the universe, he first of all *figured* with forms and numbers fire, earth, water, and air."†

Our own great authority, Sir Isaac Newton, makes use of these memorable words, in replying to Mr. Harrington's suggestion, that certain simple mathematical ratios, technically called harmonic ratios, would be found to be applicable to proportions in architecture. Mr. Harrington's words are these:—

"I have conjectured that the other most general established architectural ratios owe their beauty to their approximation to the harmonic ratios, and that the several forms of number are more or less agreeable to the eye as they suggest the ideas of figures composed of such ratios. I am sensible these matters have been touched upon before, but my attempts were to reduce matters to some further

* Vide p. 263, *ante*.

† He then proceeds to define three elementary triangles generating four bodies, which he conceives are the elements of the most beautiful forms in external nature, the proper understanding of which lies at the base of the study of form. We must endeavour, he adds, to harmonize the four sorts of bodies excelling in beauty, and to evince by this means, that we sufficiently comprehend the nature of these.

certainty as to the simplicity and origin of the pleasures affecting our different senses; and try by comparison of those pleasures which affect one sense, from objects whose principles are known as the ratios of sound, if other affections agreeable to others of our senses were owing to similar causes."

Sir Isaac Newton to Mr. Harrington:—

"You observe that the multiples hereof (viz. the lines 3, 4, and 5) furnish those ratios that afford pleasure to the eye in architectural designs, and that the ideas of beauty in surveying objects arise from their respective approximations to the simple constructions; and that the pleasure is more or less, as the approaches are nearer to the harmonic ratios: I believe you are right. Portions of circles are more or less agreeable as the segments give the idea of the perfect figure from which they are derived. Your examinations of the sides of polygons with rectangles certainly quadrate with the harmonic ratios. In fine, I am inclined to believe some general laws of the Creator prevailed with respect to the agreeable or unpleasing affections of all our senses; at least the supposition does not derogate from the wisdom or power of God, and seems highly consonant to the simplicity of the microcosm in general."—*Isaac Newton, May* 30, 1693.

Sir William Hamilton, professor of metaphysics in the University of Edinburgh, writes on the very view we are about to examine:—

"Your very elegant volume, 'Science of those Proportions,' &c., is to me extremely interesting, as affording an able contribution to what is the ancient, and, I conceive, the true theory of the beautiful. But though your doctrine coincides with the one prevalent through all antiquity, it appears to me quite independent and original in you."

We have, therefore, high authority for suspecting that it is in some simple mode of dealing with the elementary figures of geometry and the elementary ratios of numbers that a true way to the appreciation and the production of the beautiful in form will be found. And if so, here lies the key to that power of originally designing forms of unfading beauty, which the ancients did possess, and which the moderns do not possess, and which I humbly submit the designer of our day should never relax his efforts to recover.

Now it is precisely such a simple treatment and combination of elementary geometrical figures, and of the ratios they bear to each other, as is shadowed forth by these authorities, that Mr. Hay submits to our notice, and therefore it appears to me to demand our attention.

The basis of his theory is, that as the ear estimates instinctively the ratios of the numbers of vibrations forming the notes succeeding or combining with each other in melody or harmony, so is the eye capable of estimating the ratios of spaces and forms in succession or combination.

Further, that simplicity of proportion, which is a necessary element to the satisfaction of the ear, is essential to the gratification of the eye in objects of form.

That the eye is guided in its estimate by *direction* rather than distance, as the ear is by the number of vibrations rather than by the magnitude of vibrations.

Mr. Hay's view thus is, in brief, that a form is pleasing to the eye in the same degree as its fundamental angles bear to each other similar proportions to those which the vibrations of the notes bear to one another in musical composition, or a part of one, such as a common chord. It does not (I need not say) follow that Mr. Hay's is a correct view, but it is reasonable, I humbly submit to you, to say, that a very careful treatment of the subject, such as his certainly is, claims the most serious and respectful attention of all concerned with arts of design.

The lecturer then described the system,—briefly as follows:—He first grouped the figures, viz., the primary right-angled triangles, which are identical with those of Plato, into three classes, arranged according to whether the relations of the angular proportions of these triangles involved the relations of the numbers 2, 3, or 5 (the harmonic primaries): out of these rectangles, so classified, proceed corresponding classes of ellipses.

He then proceeded to show how, out of these rectilinear and curvilinear figures, forms of admitted beauty might be constructed.

The examples he selected included the front of the Parthenon, in all its principal features; several instances of leaves of plants; certain of the purest of Grecian architectural mouldings; diaper designs of great beauty and variety; and, finally, the proportions of the human skeleton.

In the course of his remarks on the Parthenon, he took occasion to say, that recent and accurate investigations, about to be published, place it beyond doubt that geometry, in its subtlest forms, presided at the cutting of every stone of the Parthenon; from which he argued, after the example of the Greeks, that geometry was essential to the successful practice of the art of design.

After describing the system, the lecturer continued,—

I do not bring those examples which have been cited as *proving* the powers of Mr. Hay's rules to produce the admitted beauty of the forms these examples represent. To be frank with you, I have, personally, doubts on the subject. I doubt, for instance, if there are not several other mathematical curves which will, even more closely than the elliptical curves to which Mr. Hay draws our attention, give us the primary lines of many beautiful, natural, and artistic objects. Nevertheless, if Mr. Hay's ellipses will give us a fair approximation to several objects, as they appear *primâ facie* to do, such, for instance, as architectural mouldings, where we are at present confessedly without rule to guide us, they are worthy of all respect. There are other points on which I could express doubts, arising probably from my own ignorance. To put all these points beyond doubt, would require a closer investigation than my leisure allows me to give to the subject. But it is precisely this that I would wish each of you to do for himself.

I think you will agree with me in considering that the results we have been examining are sufficiently striking to merit grave consideration. We are aware of the want of similar principles to which we may refer such harmonious sensations of the eye as those which we possess, and to which we are able to refer the harmonious sensation of the ear in the laws of music. We need some simple rules and tests to assure us of what is good and beautiful in form as thoroughly as we are assured of what is good and sound in music. We need something to relieve the designer from the exacting caprice of the changeable taste of the day,—some law to which he may appeal as decisive upon the harmonious symmetry of the form he has designed. We have the highest authority for believing that such a law lies not far from the surface, and was perhaps known to a portion of the ancients, but is lost to the moderns, to which we may not unreasonably attribute the admitted inability of the moderns to produce original designs in objects of form which will bear comparison with the ancients. All this, I submit, should induce us to follow up the inquiry in which Mr. Hay has so ably led the way; and whatever the result of your inquiries may be as to the accuracy of Mr. Hay's views, of this you may rest assured, that by familiarizing yourself with the combinations of the geometrical figures and the application of the principle of simple proportion constantly recurring in nature, you are educating the *mind*, the hand, the eye, in the true elements of design; and when you have done this for a while, you will be led to confess the truth of Field's words when he says, "The infinite wisdom that contrived these beautiful elements (the primary geometrical figures) has fraught them with admirable properties wonderfully suited to exercise the logical intellect of the geometrician, and to the disclosure of infinite utilities for the advancement of all arts and the benefit of mankind."

WILME'S SYMBOLIC MAP OF LONDON.*—The object of this map, just now published by Mr. Wilme, is to direct visitors to the lions of the metropolis, all of which are pointed out by perspicuous marks explained at the foot. The appearance of the map is injured by the splotchy red spandrels in the corners.

* London: Baily, Brothers.

THE SEVEN PERIODS OF CHURCH ARCHITECTURE.

THE high reputation of THE BUILDER, and its large circulation amongst a class of persons who have not always the opportunity of testing for themselves the statements which it contains, renders it very desirable to avoid inserting anything as a fact which cannot be proved to be really such. It is for this reason that I observe with regret that you have given currency to Mr. Sharpe's theory of "Seven *Periods* of Church Architecture," without expressing any doubt as to whether they will stand the test of examination by history or not. Mr. Sharpe's divisions are so obvious, so easy, and so natural, that the merest tyro in looking through the plates of windows in the Glossary, or any other popular series, must almost necessarily make them for himself; and it is much to be regretted that these divisions were not successive periods, but were frequently contemporaneous, as is easily proved by well-known examples and well authenticated dates. If I am not trespassing too much on your space, I will, with your permission, run rapidly through each of his *periods*, and show that this is the case.

1. *Saxon Period.*—The observation of Mr. Rickman that we have very few buildings known to be more than a very few years earlier than the Norman Conquest, has never been answered; and many of the buildings which it is now the fashion to call Saxon, there is every reason to believe were really built after the Conquest, as for instance, the towers at Lincoln in the low town, built on ground which was drained from the marshes after the Conquest, when the inhabitants were driven out of the fortified town at the top of the hill, to make room for the Norman castle and cathedral, which together occupied half of the site of the original town. The history of this period is, however, too obscure to be worth disputing.

2. *Norman Period,* 1066 *to* 1145.—What possible ground can Mr. Sharpe find for making the use of this style terminate at this particular date? which excludes one-half of our finest and richest Norman buildings, as Iffley Church, built about 1160; Peterborough Cathedral, transept and nave built between 1155 and 1177, by Abbot Waterville; Bishop Alexander's fine west doorways at Lincoln; and many others which it would be tedious to enumerate.

3. *Transitional Period,* 1145-1190.—This begins just thirty years too early: the earliest authenticated instance of the transition of style in England is the Choir of Canterbury, begun in 1175. Occasional instances of the use of the pointed arch may be found earlier, and indeed throughout the Norman style, as in the Church of the Crusaders at Jerusalem, built about 1100, to say nothing of Sicily; but the pointed arch *alone* is no proof of transition of style, which is characterised by a greater lightness of work, a superior finish in the details, and a change in the forms of *all parts*, not in the arches of construction only, the form of which at all periods was dictated by convenience.

4. *Lancet Period,* 1190-1245.—The latter date excludes the celebrated Five Sisters at York, in the north transept, built between 1250 and 1260. The first excludes Becket's Crown at Canterbury, built in 1184, the windows of which are as perfectly lancet-shaped as any others that can be cited. But the question here is not one of date only. Lancet-shaped windows were so very convenient, and so elegant at the same time, that they were used for a much longer period than Mr. Sharpe assigns to them, contemporaneously with windows of other forms. They are found occasionally in all the styles, especially in towers.

5. *Geometrical Period,* 1245-1315.—This includes part of two of the established styles—the Early English and the Decorated. The idea is not a new one: the same division, and the same name for it, was proposed by Mr. Freeman to the Oxford Architectural Society in 1842. That society very properly declined to adopt it, on the ground that "it is impossible to define such a style." It applies to the windows *only*, the other members of a building do not agree with this division—doorways,

mouldings, and all other details are opposed to it. The earlier examples, windows of two or more lights, with foliated circles in the head, are contemporaneous with lancet windows, and are continually found together in the same building. Nothing is more common than to find the side windows of a chancel lancet shaped, and the end windows of three lights with foliated circles in the head, evidently built at the same time. Many of these foliated circles are earlier than Mr. Sharpe's first date. Mr. Sharpe's three first figures, Nos. 1, 2, 3, as given in p. 356 of THE BUILDER, as examples of three distinct *periods*, are, in fact, often contemporaneous. On the other hand, the later division of those windows, which have not only foliated circles in the head, but other tracery of geometrical patterns, are continually found contemporaneously with flowing tracery; and there is the same difference between doorways and other details accompanying these two divisions, as between those which accompany lancet windows on the one hand, and flowing tracery on the other.

6. *Curvilinear Period*, 1315-1360.—Examples of flowing tracery occur both before and after these dates, as in Bray Church, Berkshire, built in 1293; the Friary at Reading, in 1306; the Lady Chapel at St. Alban's, in 1308; and in Wymington Church, Bedfordshire, built between 1270 and 1290. They are, therefore, contemporaneous, both with geometrical, and occasionally also with perpendicular, tracery.

7. *Rectilinear Period*, 1360-1550.—This is merely a change of name without any object, and the dates are not well chosen. The change of style did not begin quite so early, though occasional instances may be found. On the other hand, good Gothic work did not continue so late as 1550 as a general style, although occasional instances may be found for a century after that date.

Another objection to Mr. Sharpe's periods is that they cannot be applied to foreign countries. In some districts "the lancet period" is wanting altogether; in others "the geometrical period" extends through nearly the whole of the 13th and 14th centuries. And the Flamboyant styles are as much Curvilinear as any style can be, yet they extend through the whole of the 15th and 16th centuries. Mr. Sharpe's attempt is well intended, but he has not attended sufficiently to the ascertained dates of various buildings, and neither he nor any one else will succeed in upsetting the received division of styles, which is grounded on fact, and has been subjected to the test of the careful examination of many accurate observers for a long term of years. F. S. A.

METROPOLITAN WATER SUPPLY.

THE general outcry against the Government project for consolidating, or, in other words, confirming and legalising the old insanitary system of supply from the Thames, &c., by the metropolitan water companies, appears to have turned the public attention back upon the more hopeful, or at least more reformative schemes of others, and especially of the Board of Health, which body certainly has not been leavened with that spirit of pithless futility which appears designedly and systematically to pursue a neutral course that pleases none but a pitiful minority of negatives, and then mistakes for a just medium measures which merely excite dissatisfaction and disgust on all hands, and are decided on simply, it would seem, because they are sure to meet with such a reception.

The Board of Health reports and documents relating to this vital and important subject, have been published by order of the House of Commons. Amongst these documents, recently handed us, are the Hon. William Napier's report and papers of suggestions on the proposed gathering grounds for the supply of the metropolis from the soft-water springs of the Surrey sands (already noticed in our columns), and the recently-issued copies of report by Mr. Rammell, an inspector of the Board of Health, and of reports subsequent to Mr. Napier's, and other information on these soft-water springs, together with estimates, surveys, minutes, and correspondence with the General Board of Health thereon, or in relation to the combination of the new sources with other works. The heads of the Bill for constituting commissioners for the Metropolitan Water Supply, brought into the Commons by Mr. F. Mowatt, Sir Benjamin Hall, and Mr. C. Lushington, with a synopsis of the same, have also been printed.

It appears from the latest printed documents of the Central Board of Health proceedings just referred to, that subsequent investigations have in the main confirmed, and, indeed, more than confirmed, the truth of Mr. Napier's report, that abundance of excellent soft water might be gathered, at moderate cost, from the Surrey springs. The supply is even more abundant, and the cost would be even more moderate than was at first supposed. "The present proximate estimate for collecting and bringing to London the proposed soft water supplies," it is said, "may be taken at 900,000*l*." The Board, as may be remembered, proposed to unite the sewerage with the water supply in one consolidated system, and "the estimate made by their inspectors of the conjoint expense of new main drainage works, main intercepting lines of sewers for upper districts, discharge lines of sewer for lower districts, connecting lines of sewer, and pipes to and from engines, buildings, &c., is 710,000*l*."

The heads of the Bill which the Board would propose are, "That the powers vested in the present Metropolitan Sewers' Commission be executed by a special commission for carrying out the improvements required, but that the numbers of commissioners be reduced to , of whom shall be paid salaries not exceeding *l*. and be removable at pleasure, and that the present powers of the commissioners for obtaining water for cleansing, for street-washing, and other purposes, be continued, and their powers further extended, to enable them to distribute water for domestic use."

The cost at which the Board state it to be practicable to afford new and complete supplies is, on a maximum estimate, threepence a week each house throughout the metropolis,—that is, for a continuous supply; but this includes large supplies for street cleansing, &c., and the exclusive expense of complete supplies for domestic use, *de novo*, they state at two pence a week each house.*

While engaged, single-handed, as "the monopolist of incendiary gas intelligence,"—that is, in exciting and leading the gas movement, which has done and is doing so much good to the public, and yielding so much profit to the gas companies, we repeatedly stated our desire in the first place to secure the success of that movement, so that thence a hopeful and instructive starting point might be gained from which reformative measures of a like or, if then practicable, of an amended nature, as regards water supply, might take their initiative. Now it is highly gratifying to observe the prominent position which the central Board of Health give to this very line of policy in their minute of date 14th January, 1851. In this minute the Board, while reflecting on the fact that almost every existing water company in the metropolis, except the New River Company, was introduced to the public upon a promise of reductions of charge, based on competition and the opportunities of free choice from more than one supply, go on to say:—

"But of late an example has been presented of reductions of charge for gas by means of the incursion of new capital into the field of supply, which has created a considerable impression throughout the metropolis; and it is scarcely to be expected that the same thing will not occur in respect to water, if the opportunity is left open by the continuance of the existing state of things.

The various gas companies introduced on the ground of competition, had, one after another, districts divided amongst them, by the consent of the rest. Within each district they had as complete a monopoly as that which the water companies now have. Their manufacture of gas was careless, and the price they charged for it was from 7s. to 12s. per 1,000 cubic feet. It may be manufactured in large quantities at 2s. 6d. per 1,000 cubic feet. A new company canvassed the shopkeepers and the larger consumers of gas, and obtained from them engagements that they would take supplies of gas from the new company if it were supplied at the reduced price of 4s. per 1,000 cubic feet of gas promised by them. Upon these engagements new capital was raised, and the works of the new company introduced. One of the old companies has been compelled to reduce its rates to 4s. per 1,000 cubic feet, a sum from one-half to one-third the former prices. Another new company has compelled a reduction of the price from 8s. to 5s. per 1,000 cubic feet.

On reviewing this proceeding, however, it may be averred that a course like that now proposed for the improvement of the water supplies, would [had it been *practicable*, as the course *adopted* alone was, under the circumstances] have been far more conducive to the public interests than the one by which the reduction of the price of gas has been effected, leaving, as it does, within the metropolis, a number of defective and unnecessary establishments, which are themselves frequently a serious nuisance [as we ourselves often hopelessly pointed out.]

In the case of the competing gas companies, applications were made from both parties for the mediation of the Board on behalf of the public, but the Board [themselves even] were compelled to decline all interference; for although there could have been *no doubt* that much public good might have been effected, and unnecessary waste and private loss averted by a proper mediation and consolidation of works, yet, from the urgent duties pressing upon the Board, with very limited means at their disposal, it was considered that they were incompetent to take any part in the matter.

The occupier of a first-class house, with stables, who now pays 11*l*. per annum for a supply of water to his house and stables, may, as has been done with gas, be assured of a constant, instead of an intermittent supply, by a new company, for 3*l*. or 4*l*. per annum; while the use of cisterns, which involve dilapidations and plumbers' bills, often equal to the water-rents, may be dispensed with. The occupiers of lower class houses may be promised reductions in like proportion, and it is clear that the promise might be made good to them in respect to water, as it has been in respect to gas.

It does not appear to be necessary, however, that the question of the value of the existing works should be entered into. That question may fairly be postponed for determination by arbitration: it is only adverted to here to elucidate the fallacy of any assumption of the continuation of a stable property in the water companies, if there be no interference with them on behalf of the public. On the contrary, the case of the gas companies shows that if there be no interference and consolidation they are all exposed to extreme jeopardy."

The commission or trusteeship in which the Board propose, in this minute, to vest the control of water supply and sewerage, is de-

*The following statement of the cost of water in thirty-two towns, &c., visited by Mr. W. Lee, superintending inspector to the Board, is interesting, and may be useful.

PLACE.	Population.	Number of Houses.	Present Cost of Water per Week. 1st Class.	2nd Class.	Cottages.
Market Harborough	2,667	478	3½	3½	3½
Great Bowden	1,320	265	3½	3½	3½
Little Bowden	508	92	3½	3½	3½
Ashby-de-la-Zouch	4,175	835	5½	5½	5½
East Retford	2,860	608	2½	2½	2½
West Retford	643	127	2½	2½	2½
Clarborough	2,302	363	2½	2½	2½
Ordsall	1,108	133	2½	2½	2½
Bacup	8,000	1,500	10½	6½	3½
Swaffham	3,414	700	19	19	19
Loughborough	11,000	2,410	3	3	3
Knighton	1,428	261	3½	9½	9½
Mileham	532	122	4½	4½	4½
Godmanchester	2,152	472	4½	4½	4½
Epsom	4,200	634	4½	3½	8½
Holbeach	3,250	650	6½	2½	2
Newcastle-under-Lyme	10,432	1,999	9	5	4
Burslem	17,503	3,539	9	5	4
Nantwich	6,000	1,034	7½	2½	3½
Ely	7,603	1,552	7½	3	2½
Litton	864	154	7	7	7
Diss	3,470	700	8	3½	3
Reading	22,716	4,260	12	6	2½
Gainsborough	8,154	1,715	7	3½	2½
Yarmouth	28,019	6,050	6½	4	3½
Gaywood	1,208	255	4	4	4
Alfreton	2,000	350	7	6	4½
March	6,296	1,307	6	4	3½
Selby	6,190	1,138	7½	3½	2
Norwich	62,344	16,383	12½	4½	2½
Worksop	4,025	854	8	3	3
Wisbech	8,530	1,935	6½	5	5
Total	244,913	52,875	...	...	...

scribed as analagous to the metropolitan roads commission; the body to be called the trustees for the consolidation and completion of works of drainage, water supply, paving, and cleansing in the metropolis.

The Bill of Mr. Mowatt and others, on the other hand, proposes to place the water supply under the control of a representative body of commissioners, chosen by the ratepayers, four out of each of seventeen districts into which the metropolis would be divided, besides four out of the city, and four appointed by the Government, as a general commission for the whole metropolis; these to appoint a paid executive of five, with a secretary,—one of the five to be nominated by the Government. No source of supply has been fixed by this Bill, that being left as a moot point for the decision of the proposed commissioners, with power to adopt new sources if desirable. A clause of the Bill authorises the dissolution of the present companies, or any one or more of them, on purchase of their undertakings at a rate not exceeding ten years' amount of their net annual income.

A new "Metropolitan Soft Water Contracting Company," provisionally registered in November last, has had a survey made of the numerous exhaustless springs and affluents in the neighbourhood of Farnham, as pointed out by the Board of Health, Hon. William Napier, Mr. Rammell, Mr. Simon, and the company's engineer, Mr. Bateman. It is confidently asserted that one-half the present supply is wasted through the intermittent system, which would be avoided by the company's proposed plan of having the mains always charged at high service without extra cost to the consumer—a plan instantly available in case of fire, and which would supersede the use of all cisterns, water-butts, &c., and secure health, cleanliness, and economy.

THE WESTMINSTER BRIDGE COMMISSION.

IT is with no small anxiety that the determination of the commission is looked for, more particularly as a rumour is afloat that it may possibly end in the change of site to the north of Richmond-terrace. It is certainly to be expected, before such a deterioration of property is agreed upon, that the parties interested should be heard. In the first place stand the occupiers of Richmond-terrace: this was planned and constructed, with a view to privacy, about twenty-one years ago, and resorted to at enormous rents, mainly in consequence of this great and rare advantage, the Crown benefiting by an annual ground-rent of about 1,000*l.* per annum. Now, supposing the traffic of the bridge to pass under the windows of these houses, surely the owners and occupiers will have just ground for compensation. The next for consideration are the owners and occupiers of houses in Parliament-street, many being tenants of the Westminster Bridge commissioners. Have they no right to be heard? If the valuable traffic is taken from them, are they not entitled to compensation? Then, again, look at the destruction to property on the Surrey side of the bridge. The present highway has been in existence upwards of 100 years: great interests have grown up in the course of this lengthened period; and are these all to be lost sight of and destroyed to favour a pet scheme of some one behind the scenes? Looking through the several reports of committees of the House of Commons, it seems to be almost the unanimous opinion of the eminent men examined before them, that the present site is the best that could be selected; and if removed, it should be as near to the present as circumstances would permit. Mr. Rendel speaks of the present site as the best that could be found. Mr. Cubitt (president of Civil Engineers) would take it a little to the north, removing that side of Bridge-street (the removal of the south side being requisite to complete the quadrangle of New Palace-yard). Mr. Rennie would select the south of the Board of Control, and thus make way for opening another street as an approach to Belgravia, and relieving Great George-street of the traffic. Others follow much in the same view: indeed, except the plan of Messrs. Page and Pennethorne, none contemplate so great a change as that now talked of. If the Government is prepared to compensate parties who will thus be injured, be it so; but when there is little to be hoped for on that head, surely those likely to be injured at least have a right to be heard.

It may be very convenient for the Chancellor of the Exchequer to nominate a commission, but it is quite another question whether the commission so appointed is to supersede the labours of all committees who have had the matter under consideration with power ample for all purposes of inquiry. But there is still another objection: the country is now building at an enormous cost the new Houses of Parliament. Of what advantage will be all this elaborate detail should there be no place from which it can be viewed? But if the deck of a passing steam-boat is the only point from which it may be seen (not examined) it will be justly considered a wasteful extravagance. The general detail of the inner court would have been all-sufficient, and far better adapted for view from the distant opposite shore, and nearer than that it cannot be approached if the north of Richmond-terrace is to be adopted. There appeared some time since in your journal a plan for carrying the bridge across to the north of the Board of Control, thereby affording sufficient space for a row of houses as a screen to the rear of Richmond-terrace, and thus affording, at some future time, an opportunity for another approach to Belgravia by widening Charles-street, with an entrance into St. James's-park. Either this or the schemes before mentioned would preserve the value of the property in the neighbourhood of the Houses of Parliament, and afford all the advantages that could be desired; whilst the removal of the bridge to Whitehall would seriously damage all the surrounding property without a single compensating benefit.

A. Z.

ARTISTICAL AND OTHER INTELLIGENCE FROM ABROAD.

Restoration and Re-opening of the Musée du Louvre.—This huge art-collection, founded since 1793 by a decree of the National Convention, has, after an interval of two years, been again opened to the public, much improved and embellished. The small saloon at the entrance is now occupied by the collection of goldsmiths' work, which is placed in oak depositories against a hanging of crimson velvet. The great square saloon is much admired, and is occupied by the master-pieces of painters of all schools. The walls consist of leather, painted brown and gold. Below is a border of ebony, and the frieze and dome are adorned by sculpture, painted grey and gold. The Gallery of Apollo presents a surprising aspect, which will be increased by paintings to be executed by M. Delacroix. The gallery containing the Flemish and Italian schools have been lighted from the top, and a new classification of the works has been adopted, being that of M. Jeanron, to whom also most of the other improvements are due. Some of the Paris papers state, that the restorations and improvements made during the last two years in the Louvre, are more extensive and important than all those made during the previous twenty years.

Rome.—Sculptures for the Cathedral of Caracas.—M. Tenerani, the sculptor, has just completed a statue of Bolivar for his monument, to be erected in the Cathedral of Caracas. The *Liberador* is represented in a standing position, a cloak gracefully thrown over his breast, his left hand grasping a wreath of laurel. The basso-relievo, which will be placed on the postament, represents the three republics, Peru, Bolivia, and Columbia, emblematised with much fancy and skill. Two statues, the *Giustizia* and the *Liberalità*,—the latter pouring gold coin out of a vessel, will be placed beside the monument, as indicating the chief virtues of the departed states'-founder.

Professor Carl Ritter has just completed an interesting work, "Hebron, the City of the Patriarchs" (*Die Stadt der Erzväter*). The Arabs designate it by the name of El-Khalib, and it has much attracted the notice of tourists. Its destruction by Ibrahim Pacha in 1837 has deprived it of many of its antiquities. The citadel, most probably the Castellum or Presidium Sancti Abrahami of the Crusaders, in which King Baldwin sojourned in the year 1100, before and after his expedition to the Villa Palmarum, south of the Dead Sea, and which was, without doubt, a Roman building, has also perished by earthquakes, especially that of 1st January, 1837.

Versailles Palace.—The Minister of the Interior has demanded a grant for repairing this château, some reparations relating to constructions of a very recent date, such as the ceiling of the Salle of 1830. The pictures also of the upper stories are endangered by the want of ventilation, caused by the heat of summer. The *Orangérie*, considered by the French as one of the finest architectural works of the kind, is much damaged in its vaulted ceiling and the staircases leading to it from the town. M. Kestel is the architect intrusted with the conservation of the palace and water-works of Versailles.

The Church of Ste. Sulpice, at Paris, has been ornamented by a statue of M. Droz, representing a novel emblem of religion—the Angel of Martyrdom. It stands opposite a statue of M. Derbœuf, and completes the series of sculpture placed around the choir of that fine edifice.

Co-operative Might.—The Protestant Church at Rosenberg, in Upper Silesia, is to be constructed by subscriptions of one *pfennig*, rather less than a *half*-farthing English. Of the three millions of pfennigs thus required, 1,919,000 have been already raised, and the foundation of the church laid on the 5th of May.

Travelling Grants to Students of Architecture in Austria.—The Austrian Government have granted to M. G. D. Malversi, pupil of the Academy of Fine Arts of Venice, a sum of 2,400 Lir. Austr. for three years, as well as travelling expenses, for his improvement in the study of architecture at Rome. Two more grants of a smaller amount have been made to other pupils of the same art-academy.

Professor Rauch.—Besides the honour and distinctions awarded to the sculptor of the statue of Frederic the Great generally known, an address of the common council of the city of Berlin is to be especially quoted:—"We acknowledge the genius with which you have seized the idea of the great man to be monumented, and thus produced a memorial for the admiration and mind-elevation (*geistigen Erhebung*) of present and future generations. In thanking you for this ornament of our city, we feel much pleasure in associating your name with those honourable men, whose great and distinguished merits for our country and city will be always dear to us." Amongst the other tokens to the deserving artist is a laurel-crown sent from Weimar, and taken from the same tree from which that for Goethe had been once gathered.

MANCHESTER SCHOOL OF DESIGN.

THE annual meeting of this important institution was held on Friday in last week, Mr. W. Entwistle in the chair. Mr. John Potter, the mayor of Manchester, Rev. C. Richson, M.A., and various other gentlemen were on the platform. Dr. C. Bell read the usual report.

The treasurer's account, read by Mr. Gregan, showed that the income of the school had consisted of 600*l.* Government grant, 293*l.* 19s. donations, 221*l.* fourteen students' fees, 74*l.* 11s. fees for private classes, 30*l.* 9s. fees from life classes; a balance being left due to the treasurer of 399*l.* 14s. 7d. On the other side of the account, it showed a balance due to the treasurer in the previous report of 227*l.* 17s. 1d.; salaries and fees of masters, 582*l.* 5s. 6d.; rent, 195*l.*; joiners' work, gas fitting, &c., 253*l.* 4s. 3d., and other smaller items; making altogether an expenditure of 1,737*l.* 12s. 7d.

The chairman addressed the meeting, and so too did the mayor.

NOTES IN THE PROVINCES.

Swindon.—The new parish church, approaching completion, is in the "Geometric Decorated" style. The plan consists of nave and aisles, chancel, transepts, and two small chapels, with a tower and broach spire at the west end of the nave: the roof is of open timber-work, and the fittings will be of oak. The exterior has the advantage of a beautiful site, being on the brow of a hill, commanding extensive views of a rich and varied character: it forms a striking object from the Great Western Railway, which runs along the valley below. The edifice has been erected by voluntary contributions, the principal contributors being Mr. A. Goddard, who presented the site, Mr. A. L. Goddard, M.P., who headed the subscription-list with the donation of 1,000*l.*, the Rev. H. G. Bailey, the vicar, to whose strenuous exertions the success of the endeavour to raise the necessary amount may be mainly attributed, whilst the inhabitants generally have liberally assisted in providing a house of prayer suitable to the increased population, the old church being, in all respects, unfit for its sacred purpose. The latter building contains a few fragments of an ancient Anglo-Norman edifice, which we hope to see preserved; but the chief part is a specimen of the debased Gothic of the seventeenth century. The architect of the new building is Mr. Scott, and the builder is Mr. Myers.

Cranfield, Beds.—A stained glass east window has just been placed in the chancel of the parish church of Cranfield. The stone work is by Birtchnell, of Woburn, and the glass by Willement, of London. The window, which is of the Perpendicular style, consists of five lights with two series of compartments in the head, above the transom. The upper series contain figures of angels, and the lower one contains representations of SS. Peter and Paul (to whom the church is dedicated), emblems of the four Evangelists, an Agnus Dei, a Pelican and her young, and the monograms AΩ and I.H.S. The five principal lights contain subjects illustrative of the leading events of the life of Christ, viz.:—The Nativity, Baptism, Crucifixion, Resurrection, and Ascension, with an appropriate text of Scripture at the foot of each. The window is the gift of Mr. J. C. Harter, of Manchester, who is father of the present rector of Cranfield and patron of the living.

Port of Arundel.—Tenders, in two amounts, have been received by the commissioners of this port for sundry improvements in the harbour. They were as follow:—

Henly	£838	0	0
Butt (accepted for part)....	787	0	0
G. Corney	777	0	1
Smith, Woolwich	761	18	9
Bramble and Crampton....	696	0	0
R. Bushby (accepted for part)	695	0	0

Moulton.—The church at Moulton, near Newmarket, is about to undergo what may be called *a renovation*. The windows generally have been found to be in so defective a state, as to defy all attempt at repair. The arch of that immediately over the pulpit and desk fell out all at once the other day. Instead of four new windows, as at first proposed, nineteen or twenty will be put in, of stone instead of clunch, besides extensive works in the roof and the masonry, and the entire reseating of the church, with a view to increased accommodation. The whole expense is now calculated at nearly thirteen hundred pounds. Mr. J. F. Clark, of Newmarket, is the architect employed. The rector has declared his intention to incur the whole expense, although the principal ratepayers, who are farmers, expressed their desire to contribute. The owners of the parish lands appear to have made no such offer. According to the *Cambridge Chronicle*, which has some very fair reflexions on the circumstances which lead to the gradual decay and destruction of parish churches after repeated patchings from one generation to another,—the occupying ratepayers lately restored a large portion of the roof which had been ready to fall in.

Carlton-upon-Trent.—On Wednesday in last week a new church was consecrated at this "model village." The style is Early Middle Pointed, and the building consists of a chancel, 32 by 15 feet; a nave 18 by 40 feet; aisles, 40 by 5 feet; a west tower, 18 feet square, and 66 feet high, with eight pinnacles given by Mr. James Vere. There is also a south porch. The font is of carved stone, the gift of Mrs. Hutton Riddel, and was designed and made at Plymouth. The cost will be upwards of 1,600*l.*, nearly 1,000*l.* of which were subscribed by the 300 inhabitants of the village, including 50*l.* from its lawyer or solicitor. The Vere family contributed 600*l.*, and Mr. Hutton Riddel 50*l.* Mr. G. G. Place is the architect. The builders are Messrs. Tinker and Huddleston, Lincoln.

Leigh.—A new church is about to be erected at Bury-lane, in Leigh. The buttresses will be of dressed stone. The style will be Gothic. The aisle and chancel will be paved with red and grey Staffordshire tiles, and the woodwork stained in imitation of black oak. The architect is Mr. E. H. Shellard, of Manchester; and Mr. John Speakman, of Astley, is the contractor. The estimated cost of the building is 1,200*l.*: it will contain 304 sittings. The site is given by the Rev. Sir H. Dukinfield, a canon of St. Paul's Cathedral, London. A small burial ground will be attached to the building. The church is to be called All Saints. There is still a deficiency in the funds.

Liverpool.—Professor Cockerell has been requested by the Committee of the Council on St. George's Hall to report as to the best mode of finishing the building. It is now said that the opening will take place at the August Assizes; but that even then the approaches and other works will not be finished.

Salford.—The foundation-stone of a new Baptist chapel was laid on Thursday week, at the junction of Bank-street with Great George-street, Salford. The chapel is to be in the Tudor style, and, when completed, will afford accommodation for from 800 to 900 persons, besides school accommodation for a large number of children in a room beneath. The erection is estimated to cost about 1,700*l.*, towards which about 1,000*l.* have been collected and promised. There are now three Baptist chapels in course of erection not far distant from each other,—two near the Catholic cathedral, in Salford, and the other in Great Ducie-street, Strangeways.

Burnley.—On Whit-Monday the foundation-stone of a Primitive Methodist New Chapel was laid in Hammerton-street. The chapel will be in the Grecian style. The front will form an arcade up to the top of the first windows, and will consist of figured and polished ashlar. There will be two principal entrances, having three windows between the doors, with Tuscan pilasters. In the second story will be five windows; and a large pediment will crown the whole building in front. The building will be 21 yards by 18 externally, and, including the value of the site, is calculated to cost about 2,000*l.* The chapel will hold 1,000 persons. A gallery will be carried round, and form a semicircle at each end. There will be a school-room under the chapel, with committee-room, &c. The architect is Mr. J. M. Pollard.

Kingswood, Bristol.—The new tabernacle at Kingswood-hill, founded on the 23rd July last, was opened on Wednesday week. Mr. H. Masters, of Bristol, is the architect. The style of the building is Early English. The front is elevated and comprises two campaniles terminating with lanterns and spires. Above the porch, in the centre of the front elevation, is a triplet window filled with stained glass. The walls of the building are of Hanham stone irregularly coursed; the quoins and other dressings of Bathford-hill stone. The roof is covered with slate of an ornamental pattern. The shutting, window-bars, &c. are of galvanised iron. The body of the chapel is divided into nave and side aisles separated by piers and arches supporting a clerestory. The length of the nave internally is 112 feet; length of side aisles, 86 feet 6 inches; width of nave, 26 feet; width of aisles, 12 feet; total width, 50 feet. The walls internally are stuccoed: the wood-work is stained; the roof open timbered. The building is calculated to hold about 1,500 persons, the whole on the ground floor. The pulpit is of Caen stone. It was presented by Messrs. J. and J. Foster, builders. The aisles are paved with pennant stone with a border of Staffordshire tiles. The building is warmed with hot water, and attention is paid to ventilation. The pews are all open, and there is a great number of free seats. The masonry was executed by Messrs. Mizen and Co., of Bristol; the carpentry by Mr. Leonard Jefferies, of Bridge Yate; the plastering, staining, &c. by Mr. Thomas Hibbs, of Warmley; the smith's work by Mr. Edward Haskings, of Kingswood; the heating apparatus by Mr. R. M. Bryant, of Bristol; and the glazing by Mr. James Bridges, of Kingswood. The clerk of the works was Mr. Wm. Smith.

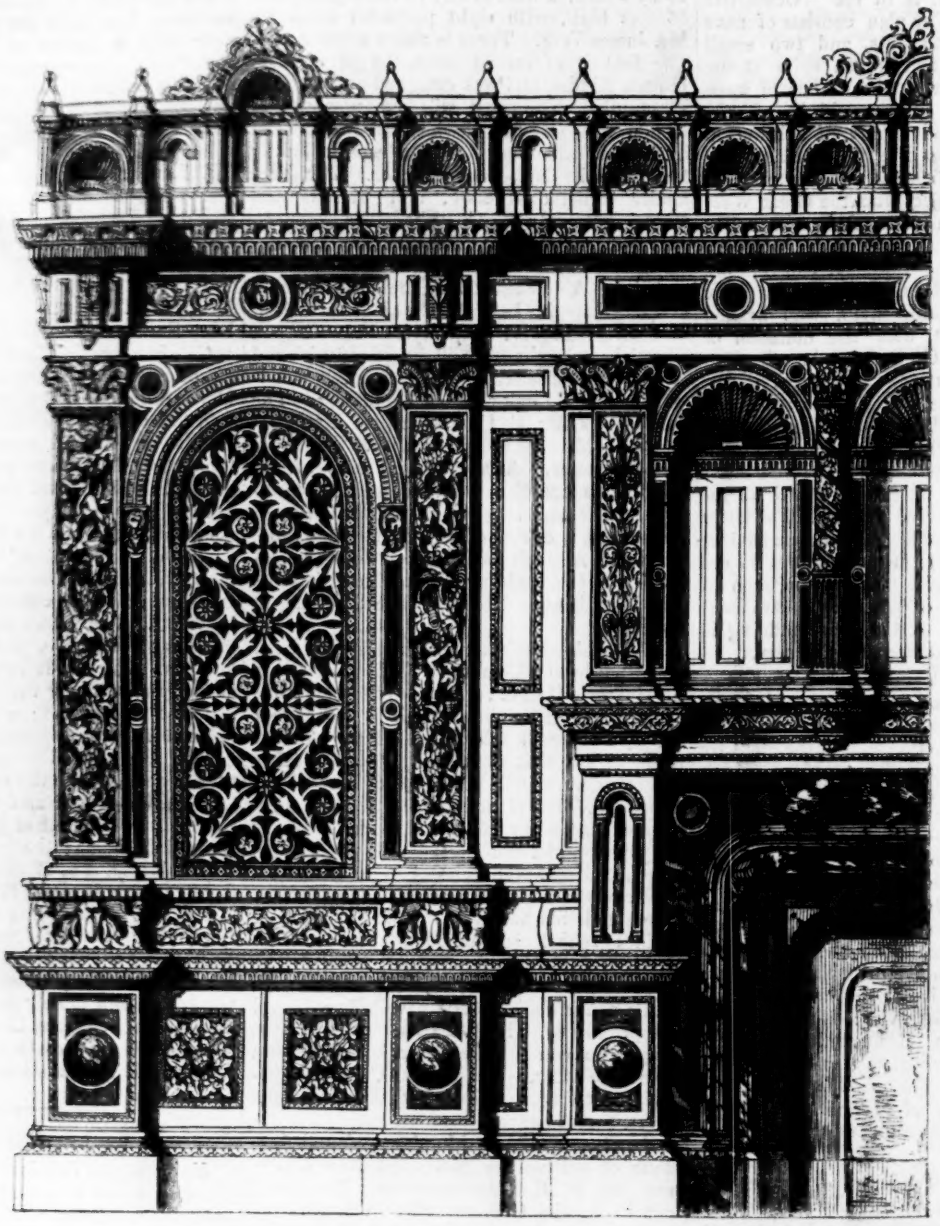
Charlestown (*St. Austell*).—The new church of St. Paul, Charlestown, according to a Devonshire or Cornwall paper, was consecrated on Friday in last week. It is in the Early English style, with nave, chancel, aisles, and transepts. The nave and aisles are 53 feet long, chancel 24, and total length from west door to east end, upwards of 100, the difference being made up by breadth of transepts: length of transepts, 57 feet. The height of nave, which is lighted with clerestory windows, is 46 feet; that of chancel, 33; and of transepts, 37. The pillars are of granite, and are short and massive, alternately round and octagon. The windows are plain lancet, three at the east, two over the west door, and at the end of each transept; with a circular window in gable at each end, and a trefoil in transept gables. The chancel is raised three steps. The roof is open, as are the seats, all of which are free. The pulpit and reading-desk are of carved oak; the font of granite. The building is of slate stone; the quoins, plinth, water tables, jambs, &c., of granite. The granite is from a quarry between St. Austell and Roche: it is said to work as fine as Bath stone. The spire, when completed, will be 70 feet high. The church is planned to accommodate 560, but will contain a greater number. The architect is declared to be "Sir Christopher Eales, Esq., of Chapel-place, Cavendish-square," and the builders are Messrs. Drew and Kitt, of St. Austell. The foundation was laid November 27th, 1849.

RAILWAY JOTTINGS.

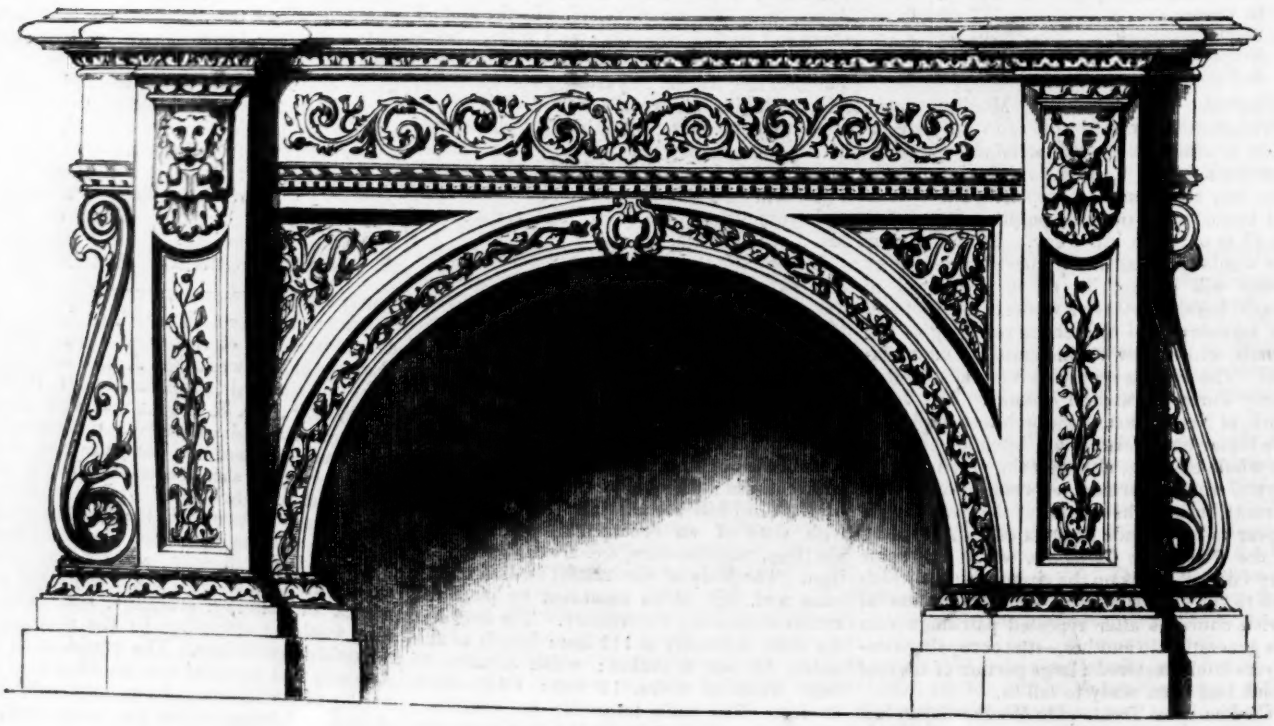
King's-cross Terminus of Great Northern Railway.—The contractors are making considerable progress with this terminus. To construct the numerous offices and buildings connected with it, and to have a sufficient area for the accommodation of the vehicles and passengers, a site, south of the Regent's Canal, of about twenty acres, has been taken, and nearly 100 houses in the various streets have been cleared away. A temporary church, which cost above 700*l.* in its erection, has been also removed. It is intended to carry the railway under the Regent's Canal, to effect which object it will be necessary to construct an iron tank over the tramway. For this purpose a dam is now being formed, about halfway across the canal, to divert the water. When this is completed, and the tank placed, the line will be continued to the terminus.

BRISTOL ACADEMY OF FINE ARTS.—The annual meeting of this society was held on Tuesday in last week, Mr. J. S. Harford, president, in the chair, supported by Mr. P. W. S. Miles, M.P., Mr. R. Bright, and other gentlemen. In the address read on the occasion a hope was expressed that the patronage of the Academy would soon be exerted in the establishment of a School of Design in Bristol. The report announced the union of the Academy with the Bristol Society of Architects. The time, it was thought, was not far distant when a building adapted to the study and promotion of painting, sculpture, and architecture, would be erected under the auspices of the united institutions. The president of the Academy had accepted the presidency of the Society of Architects. An autumn exhibition of works of living artists was announced, to begin on 8th September.

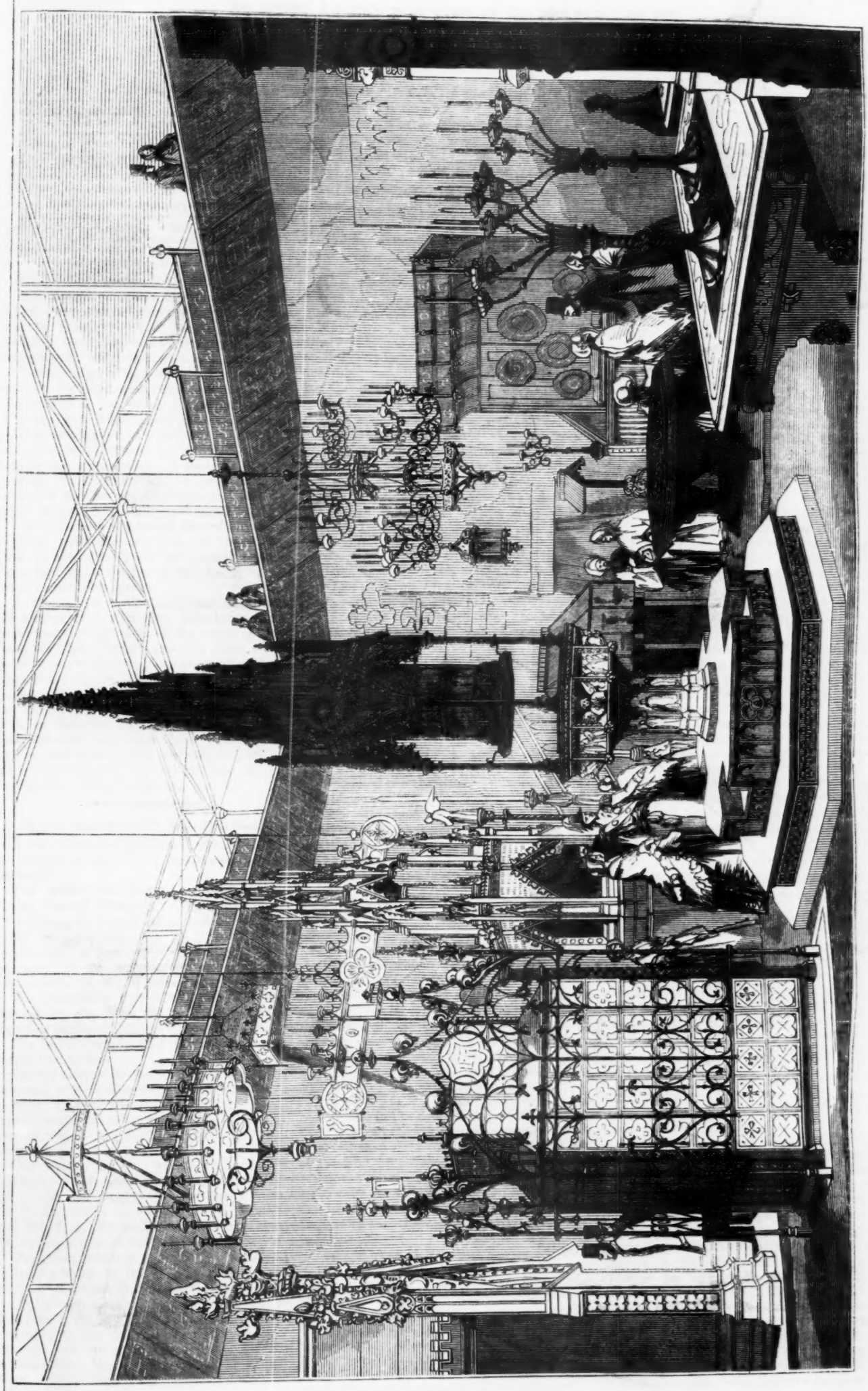
SIDE OF A LIBRARY.*



CARVED MARBLE CHIMNEY-PIECE.*



* See page 383.



VIEW OF THE MEDIÆVAL COURT, GREAT EXHIBITION.

[See page 393 *ante*.

CENSUS OF GREAT BRITAIN.

The following is a return of the Houses and Population in 1841 *and* 1851.

	1851 (31st March).						1841 (7th June).					
	HOUSES.			POPULATION.			HOUSES.			POPULATION.		
	Inhabited.	Uninhabited	Building.	Persons.	Males.	Females.	Inhabited.	Uninhabited	Building.	Persons.	Males.	Females.
Great Britain, and Islands in the British Seas	3,675,451	165,603	29,109	20,919,531	10,184,687	10,734,844	3,465,981	198,129	30,334	18,655,981	9,074,642	9,581,339
England and Wales	3,276,975	152,570	26,529	17,905,831	8,754,554	9,151,277	2,943,939	173,234	27,468	15,911,757	7,775,224	8,136,533
Scotland.....	376,650	11,956	2,378	2,870,784	1,363,622	1,507,162	502,852	24,026	2,646	2,620,184	1,241,862	1,378,322
Islands in the British Seas	21,826	1,077	202	142,916	66,511	76,405	19,190	869	220	124,040	57,556	66,484
London	307,722	16,889	4,817	2,363,141	1,104,356	1,258,785	262,737	11,324	4,032	1,948,369	912,001	1,036,368

NOTE.—The army in Great Britain, and the navy, merchant seamen, and other persons on board vessels in the ports, are included in the Return for 1851: the navy, merchant seamen, and persons on board vessels, were not included in 1841.

The apparent decrease of houses in Scotland between 1841 and 1851 is attributable to the fact that in 1841 flats or stories were reckoned in many places as "houses": in the present Census the more correct definition has been employed.

GEORGE GRAHAM, Registrar-General.

TOPOGRAPHICAL MAP OF LONDON.

MR. ROBERT MYLNE has just now issued a first attempt at a contour map of London and its district.* The data for levels are founded upon the recent Ordnance survey, adopting the well-known local standard datum of Trinity High Water Mark. The contours indicate by shadings, successive steps of 10 feet elevation, by which the natural surface drainage and water shed area of the metropolitan districts are well defined. The various soils are distinguished by different colours, and, by the combination of topography with geology, it facilitates the comparison of the levels of the outcropping strata and drift deposits of gravel and buckearth loam.

The sub-strata of London were studied, and sections published of them, in March, last year, by Mr. Mylne; and the present map is grounded upon that, with the result of still more recent investigation.

In the district of Woolwich and Greenwich the outcrop of five distinct stratifications are to be traced on the slope of the rising ground from the River Thames, based by chalk, which appears on the surface,—caused by a remarkable *disturbance* or *fault* in its stratum. In the neighbourhood of Highgate and Hampstead are shown the position of the sandy upper beds of London clay, which occupy a considerable area, and have been but partially known, and never before mapped, and by the aid of the contours they will be seen to dip considerably to the eastward.

IRISH ARCHITECTURAL DOINGS.

A NEW Presbyterian Church is to be erected at Ballymere, and the foundation-stone has been laid.

The Board of Guardians of Rathkeale Union intend erecting an industrial ward 74 feet long by 18 feet wide, and two stories high, in connection with the present workhouse, and the drawings for same have been prepared by the architect to the Poor-law Commissioners, Mr. Wilkinson.

We understand that 2,000*l.* are to be expended by the New Ross Fever Hospital Trustees in the improvement of that port.

The Royal Cork Yacht Club intend erecting a new club-house.

Sundry alterations and additions are to be executed at the different churches in the King's County, County Meath, and County Westmeath, according to the specifications, &c., by the architect to the Ecclesiastical Commissioners.

The works at the grand Cathedral of Armagh, which were commenced ten years ago under the auspices of the late primate, Dr. Crolly, are to be completed immediately, and Mr. J. J. M'Carthy has been appointed the architect to superintend their erection.

The Commissioners of Public Works intend to build a bridge at Ballyboggin, between the counties of Meath and Kildare, also bridges at Moortown and Anadruse, according to drawings at the engineer's office, Kinnegad.

A new Roman Catholic church, with convent and schools adjoining, is to be erected in Enniskillen, on a site overlooking Lough Erne. Mr. M'Carthy has been instructed to prepare designs for it.

The Commissioners of the borough of Cavan have determined to light the town with gas, and have invited proposals.

Advertisements have been issued by the Board of Guardians of Thurles Union for intended buildings at the present workhouse, according to the plans prepared by the Poor-law Commissioners' architect.

The Goggin's-hill tunnel, on the Cork and Bandon line, has been publicly opened. The directors and their friends were conducted through the tunnel, which is 900 yards in length, in a carriage drawn by the navvies. The entire line it is stated positively will be opened for traffic the first week in July.

The new lecture-hall of the Dublin Mechanics' Institute has been publicly opened, and a grand *soirée*, with concert, given on the occasion. The total sum collected by subscription for the erection of the new buildings was 1,311*l.* 5s., and the amount expended on the lecture-hall was 486*l.* 6s. Messrs. Louch and Low, architects, gave their professional assistance gratis, and Mr. John O'Rourke was the contractor.

Mr. Kivas Tully, late of Limerick, architect, has (we understand) designed the model for building Trinity College Church University at Toronto, which will cost 20,000*l.* being an institution devoted to the Protestant Episcopal Church in Canada.

A new bridge is to be erected at Galway upon the site formerly occupied by the Old West bridge, and the Board of Public Works have declared Mr. Patrick Nugent the contractor. The foundation-stone has been laid with more than ordinary ceremony. Mr. Roberts is the district engineer.

The corporation of Dublin intend having public baths and washhouses established in the metropolis, and a sum of 900*l.* is to be expended thereon. It is also in contemplation to erect a bridge across the Liffey immediately opposite the Custom-house. Model lodging-houses are also to be established.

The railway from Dublin to Belfast will be opened by the 1st of November next with the exception of the viaduct over the river Boyne, which will not be finished until October 1852.

A new altar and tabernacle of white marble has been erected at a cost of 400*l.* in St. Paul's Church, Arran-quay. It has been manufactured by a native artist. Mr. P. Byrne is the architect who furnished the designs.

A large organ, by Talford, of Dublin, has been placed in the new church of St. John, at Sandymount (which was fully described some time since in THE BUILDER). It was the gift of the Hon. Mrs. Sidney Herbert.

An iron screw light-house is in progress of erection on the Spit Bank, Queenstown, under the direction of Mr. Mitchell, C.E. Two of the screws have been fixed in their respective positions.

The first stone of a new workhouse has been laid at Urlingford by the county surveyor, Mr. Carter. The contractor for executing the works under the Poor Law Commissioners' architect is Mr. Bevinham.

New bridges are to be erected at Castlenode, Carrownaskey, Lisonuffy, Mountbrown, and Bunamucka; also at Killumod, Carrickglass, Ballyclare, and Ballinamore, according to plans at the Drainage Engineer's Office, Longford.

The board of guardians of Castletowndelvin union have determined upon the erection of a new workhouse, and the works are to be executed according to the drawings, &c. furnished by the architect to the Poor Law Commissioners.

A new workhouse is also to be erected at Bawnboy, county Cavan, from the designs of the same architect.

The parish church of Pallasgreen, county Limerick, is to be enlarged, and tenders are being received for the execution of the works.

A new chapel, orphanage, and convent are to be erected at Mount St. Vincent, Limerick, the designs and working drawings for which have been made by Mr. John Neville, architect, Dundalk.

The new corn exchange at Belfast, which is being erected from the design of Mr. Thomas Jackson, architect, of Belfast, is situated at the corner of Corporation and Victoria streets. It is intended to appropriate the ground-floor to shops or offices, and four apartments, about 32 feet by 15 feet each, have been provided for that purpose. On the upper story is the exchange-room, 60 feet long by 32 feet wide, approached by stone stairs at one extremity of the building. There are six windows at the sides of this apartment: two retiring rooms are provided. At the extremities of the exchange-room are three doors, with piers, and entablature supported by enriched consoles: over each is a panel sunk in the wall, and curved at the head. A pedestal, with moulded capping and a series of panels in the die, is continued round the apartment. An ornamented entablature is intended to surmount the room, and thence rises a segmental roof of iron, with large lantern light in the centre. The floor is constructed on a fire-proof principle.

FORMATION OF TILE ROOFS.

IN a late number of THE BUILDER I gave a few hints concerning the laying of plain tiles on roofs, so as to make weather-tight work. I beg leave to submit some additional observations:—

Each tile should be curved or bent one quarter of an inch in the length of the tile, to allow a bed of mortar to be laid under the middle part of each course of tiling. The tiling should also be jointed with mortar from the top end of each tile downwards, to a little above the gauged part of the tile.

It is of importance that the tiles be all whole and entire, particularly at the top ends, as that is where the wet is most likely to find its way to the inside of the roof.

The mortar to be used should be well tempered and worked till it is of a tough consistency, so as it may not be liable to crumble away by heat, frost, or any other cause, after the work is finished. By this method the tiling will be compact and solid, as each tile will have a bearing at both ends, and also in the middle: the work will look well when finished, as the bottom ends of the tiles will fit close on the tiles under them, which is frequently not the case when the tiles are straight, and the roof will be completely weather-tight, if properly executed according to the foregoing directions. But to make the work still more secure, it may be as well to point the heads of each course of tiles in the inside of the roof. It perhaps might not be amiss to suppose that, if architects having plain tile roofs to be executed under their authority, were to specify that

* Wyld, London.

no tile to be used should have a curve or bend of less than one quarter of an inch in the length of the tile, or be bedded and jointed otherwise than as described, tile-makers would soon find it to be to their advantage to make them of the required shape. The tiles are supposed in this statement to be 10 in. by 6 in.

Concerning the execution of ornamental tiling in lozenge or chequered patterns of various colours, which is now being used in some places, this is very liable to have some defects, but by a little previous care and attention they may be avoided.

The workman should commence the laying of the tiles at the hips and valleys, and continue along to the gables, where it may terminate as it happens, as it is of less importance to have the figures there incomplete than at the hips and valleys.

Where the work terminates at both ends by hips or valleys, the workman should ascertain, in the first place, whether the figures will come all in of their proper sizes or not: if not, then the borders at the terminations could be widened, or the one least exposed to view could be made narrower, so as to meet the requirements of the case; but on no account should it be left to turn out at random, as there will be as much difference in the effect of the work being finished properly or improperly, as there would be in the appearance of a garment made and fitted properly for the use of the wearer, and one made at random, having the nooks and corners cut off afterwards to fit it for the same purpose.

When the roof is of a high pitch, with any intersections, the tiles will require to be made longer or narrower, to suit the pitch, as the height of it, and, consequently, the angle of the intersecting line, regulates the shape of the figure of the tiling, which will be longer in proportion to its width, the higher the pitch of the roof may be; and as it is essential that each tile should have at least two inches lap, the difficulty will perhaps be easiest overcome by this expedient. The half-pitch roof will require a gauge of about 4¼ in., so that the common-sized tiles will answer the purpose for it.

A. PATERSON.

THEATRES AND SCENERY.

Her Majesty's Theatre.—"Il Prodigo," the *Enfant Prodigue* of Scribe, and the "Azael" of Drury-lane, has been produced here with a *mise en scène* (as the French call it) of extraordinary splendour and beauty. With pretty music, picturesque groups, gorgeously attired, filling the scene, and novel and exciting dances, it cannot fail to draw large houses. As an instance of rapid production it is very remarkable: one of the principal scenes in Memphis was begun and finished, we are told, on the day on which the opera was first represented. The costume of Massol, who, as Reuben, sings touchingly, is worthy of an artist.

The Royal Italian Opera House.—The revival of the favourite here has brought back some beautiful scenery to the stage of the Italian Opera House; for example, the vaulted Moorish loggia at the end of the first act and beginning of the second, decorated with mosiac work, and showing in the back ground gardens and residences. The last scene, the interior of a ruined monastery, is exquisitely beautiful in effect, though not without solecisms architecturally. Grisi, Mario, and Tamberlik have the chief parts in this opera, and sing them finely. The crowds now in London begin to tell in other places besides the park, and no where more than here. On Saturday in last week, when the Queen ordered *Don Giovanni*, every inch in the theatre was occupied.

The Lyceum Theatre.—The revival of Mr. Planché's smart little comedy, "The Court Beauties," with all its pristine elegance in costume and "getting up," was *à propos* of the Queen's ball. To those who appreciate close adherence to truth in time and circumstance, and refinement in every detail, it will afford a great treat. Mr. Charles Matthews seems to delight in the sparkling impudence of Buckingham, and emulates the character by his consummate acting. The regal ease with which Mr. Vining assumes Charles II., the unction of Mr. Roxby in the happy illustration of an empty-headed conceited courtier of the time, and the irresistibly comic humour of Mr. Frank Matthews, as old miserly Sir John Hunks, are admirable studies. As for the representatives of the "Beauties," they would have made old Sir Peter Lely stare, for we doubt if the originals were half so charming: great artistic pains and skill are evinced in their arrangement.

DRAIN-PIPES GLAZED AND UNGLAZED.

AT page 352 of THE BUILDER (Vol. IX.) I observe some remarks as to glazing drain-pipes for sanitary purposes.

I approve of the remarks that are made relative to the glaze not adding at all to their durability, as I have discovered in the course of my sewering operations vast quantities of Roman and ancient British pottery, the unglazed being quite as sound and good as the glazed after being buried beneath the surface of the ground, even in damp and wet situations, for at least fourteen centuries.

In some portions of the Roman pottery (Samian ware) that I have found, the glaze is chipped off in places, and the Roman drain-pipes or tiles are not glazed at all. Mr. Austin, in his evidence before the Metropolitan Sanitary Commission (page 126 of report), says:—"The drain-pipes of ancient Rome are at the present day perfect, although of far inferior material to the vitrified glazed stone ware now manufactured in this country" (which I very much doubt).

"At the ruins of Trajan's bath," (erected A.D. 110), "near Civita Vecchia, I recently examined some of these pipes, which are still perfect," a strong argument of their durability even without the glaze so strongly insisted on by some parties.

I think if the manufacturers, instead of paying so much attention to glazing their pipes, would endeavour to perfect them in quality of material, strength, shape, and uniformity, and burn them well,—in fact turn out a perfect article, which, I am sorry to say, is not generally the case,—a greater benefit would be conferred upon the public.

If the manufacturers burned a perfect article, correct in contour, perfectly straight, and made it to fit truly at the joints, we should hear little of the "cuckoo cry" of *glazed pipes*, because we should have conduits quite as smooth as the interior surface of iron pipes, and capable of discharging as much fluid, and all that would be required would be care in laying them so as to give them a *sufficient* inclination to discharge the sewage.

I believe the introduction of glazed pipes, like the modern plan of flushing sewers, to be nothing more than a weak attempt to support a "rotten" system of town drainage.

BAYLIS.

DISCOVERY OF A CRYPT UNDER DEANERY HOUSE, WATERFORD.

AT a meeting of the Kilkenny Archæological Society, held on the 7th, the Dean of Waterford made a communication on the above, from which we take the following. It was always known, the Dean said, that a large vault existed beneath the Deanery House at Waterford; but it was never explored, nor was it known how far it extended. On coming to reside here, I found this an object of interest to the antiquary, and proceeded to explore and re-open the Crypt.

At the commencement, we found the end of the Crypt filled with rubbish, so that no more than two-thirds of its entire extent was visible, and all was darkness, no ray of light being admitted into it. On removing some of the rubbish, there was discovered at the extreme end (the south), a pointed-arch doorway, and on proceeding with the work, this was found to lead to a spiral stair. Proceeding up these stairs, we found ourselves in an apartment adjoining the coach-house, the entire staircase having been filled up with rubbish, and part of the offices built over it (the present Deanery, &c., was erected about 150 years since). Having removed the building, the staircase was made to open into the garden. This was evidently the stair of a round tower, leading to the upper story of the ancient buildings.

The whole length of this crypt is 60 feet—the breadth, which is uniform, 19 feet. The arch of the vault is a semicircle, and the whole is supported, and divided into two equal aisles, by "massive arches, broad and round," springing from

> "Ponderous columns short and low;"

evincing the character of the original building, when, like that of Lindisfarne,

> "In Saxon strength the abbey frown'd."

The counter arches are semicircular, springing from pillars, square but chamfered at the corners. Of these pillars there are five distinct, and two pilasters, forming six arches, running from north to south. The height of the crown of the arch is 11 feet; that of the pillars 6 feet 2 inches; the distance between the pillars 8½ feet. The entrance at the east side is 5½ feet wide. From floor to threshold of this entrance are five steps of 9-inch risers; and from thence to the original level are five steps more.

The spiral stair at south end is 8½ feet in diameter, and consists of twenty-one winding steps of 6-inch risers. The pointed door-arch at foot of stairs is 7 feet to the point of arch. The window of stairs is 3 feet below the present exterior level.

The greater part of the pillars and the entire of the pointed door-arch are built of a white soft stone, which I believe to be Caen stone: the rest is of native limestone, beneath the outer surface, at the west side,—some at the end of the east side. It is probable that the crypt extended further, but was cut off to erect the deanery at one end, and the Town Hall at the other.

A second vault, hitherto used as a coal cellar, extends from the northern end of the crypt above described—which is curious, as containing in the roof large quantities of the *hurdle*, used for the centreing of the arch in the original building of the edifice. In a brick partition dividing off a wine cellar in this vault, I found, built up and plastered over as part of the partition, a finely carved piece of oak, apparently part of an altar-screen, measuring seven feet by twenty inches—in good preservation.

Within 20 yards of the deanery are the ruins of a Franciscan Abbey, containing some fine lancet windows, and pointed arches, and several curious tombs of the 15th, 16th, and 17th centuries, and a fine mural monument. On several of these tombs are the four letters, I. M. R. A. The meaning of these I have not been able to learn. On one of the tombs representing the crucifixion, &c., is the *sword* used by Peter, and the *right ear* of the servant which he cut off. These were quite new to me.

INSCRIPTION ON A TABLET IN LIMERICK CATHEDRAL.—"Mementi Mory. Here lieth Littele Samuell Barinton, that great Under Taker, of Famious Cittis Clock and Chime Maker; He made his one Time goe Early and Latter, But now He is returned to God his Creator. The 19 of November Then He Scest, And for His Memory This Here is Pleast, By His Son Ben 1693." The correctness of this copy, *in every respect*, may be relied upon.—R. J. R.—*Notes and Queries.*

ROAD BRIDGES.—More than ever, I think, does the crowded state of our public thoroughfares at this moment show the necessity for the erection of light foot-bridges over the crossings of some of the most thronged streets, for the safety and convenience of the multitudes of foot passengers; and I have no doubt but that with the skill of our engineers, light structures, well adapted for the purpose, could be readily provided at a moderate cost. It would be well if an experimental one could be *immediately* erected on one of the principal routes for foot passengers to the great Exhibition; for example, from the Green-park to Hyde-park, across Piccadilly, where, from the width of the street, it could be done without at all interfering with the roadway for carriages.—W. C. TREVELYAN.

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These erections are, in many instances, of the colour of the native rock, out of which they have been built:—

"Clustered like stars; some few but single most,
And lurking dimly in their shy retreats;
Or glancing on each other cheerful looks
Like separated stars, with clouds between."

The dwellings, in most cases, have descended from father to son, yet necessarily with changes in their circumstances: they have received without incongruity additions and alterations adapted to the need of each successive occupant; so that these humble dwellings remind the contemplative spectator of a production which has risen from the native rock. Among the numerous recesses and projections in the walls, and the different stages of the roofs, are seen bold and harmonious effects of light and shade: nor will the singular appearance of the chimneys escape the eye, some almost upon a level with the roof, others of a quadrangular shape, rising one or two feet: the covering of the roof is generally of rough slates, rudely taken from the quarry; and being very uneven in their surface they have furnished places of rest for seeds of lichens, mosses, ferns, and flowers. Hence buildings, which, in their very form, call to mind the process of nature, do thus, clothed with this vegetable garb, appear to be received into the bosom of the living principle of things as it acts and exists among the woods and fields, and, by colour and shape, affectingly direct the thoughts to the tranquil course along which the humble-minded inhabitants have, through so many generations, been led.

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W. H. V. S.

LONDON IMPROVEMENTS AND THE POOR.

UPREAR the gorgeous palace high!
Let column after column rise,
And art put forth its symmetry,
And sculpture warm 'neath royal eyes.
Oh! 'tis a goodly sight to see,
In Britain, wealthy, proud, and free,
Her monarch's home a temple fair,
Bedeck'd with all things rich and rare
A tributary world can bring
For England's queen or England's king.
Build for the queen!—forbid it not;
But, ah! who builds the poor man's cot?

Build for the merchant, rear the mart!
For commerce make a splendid home:
Tax well each architectural art:
Boldly upraise the spacious dome.
There shall a mighty congress meet,
The lords of Britain's merchant-fleet,
The busy traffickers, whose stores
Are garnish'd from a myriad shores:
But, oh! the squalid home that mocks
The labourer of our merchants' docks!
Be not the earnest cry forgot,
Who builds, who builds, the poor man's cot?

Build high the column to the dead
Who died for England! it is well.
"Those stones might give the living bread,
Might build warm homes where men might dwell,"—
The poor man thinks—a churlish thought,—
But he were quickly better taught
If those who rear'd that column's height
Would give the next "convenient site"
To build homes, where at moderate rent
The labouring man might rest content.
We cannot change, then cheer his lot—
Who builds, who builds, the poor man's cot?

Who builds? who builds? Alas, ye poor!
If London day by day "improves,"
Where shall ye find a friendly door,
When every day a home removes?
Wide streets "low neighbourhoods" reclaim,
Where virtue lives next door to shame.
Who will build homes to house again
Those we are making homeless men?
"Down with yon haunt of vice," we cry—
Alas! there poor men live and die.
Then ere we triumph o'er the spot,
Who builds, who builds, the poor man's cot?

R. J.

Books.

Horæ Ægyptiacæ: or, the Chronology of Ancient Egypt, discovered from astronomical and hieroglyphic records upon its monuments, including many dates found in coeval inscriptions from the period of the building of the Great Pyramid to the times of the Persians. By REGINALD STUART POOLE. With plates. Murray, Albemarle-street. 1851.

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The peculiar feature in Mr. Poole's researches is the maintenance of the assertion that many of the kings in the interminable dynasties of Egypt were contemporaneous; thus greatly altering our ideas of the chronology of ancient Egypt. On a subject already teeming with perplexities and differences of opinion, we have thus one more difference added, either to increase the sum total or to clear it all away. "I am aware how greatly I disagree with all others who have written on this subject," the author observes, "but it is a sufficient consolation to me, since all differ, that it is little more to differ from all others, than to differ from all of them but one." It remains to be seen, therefore, how this bone of contention will be picked by the already differing Egyptian archæologists in future works. For our own part we confess that in studying the majority of authors on this subject, we have ever felt as if we were walking on thin and brittle ice, and liable to fall through at every step. We would advise a still more patient and penetrating research amongst the records of Egyptian theurgy, the rolls of magical records, and other stores of the "wisdom" of ancient Egypt—or rather, of the superstitious remains of that wisdom: there we doubt not some light would be got whereby to decipher much that is obscure on its monuments.

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Hand-Book of Natural Philosophy and Astronomy. By DIONYSIUS LARDNER, D.C.L., formerly Professor of Natural Philosophy and Astronomy in University College, London. First Course—Hydrostatics—Hydraulics — Pneumatics — Sound —Optics, with upwards of four hundred illustrations. Taylor, Walton, and Maberly, Paternoster-row. 1851.

LARDNER and Mechanical Philosophy, though not exactly synonymous terms, have long been associated somewhat as the sublimer subject of Astronomy has been with the name of Herschel; not so much as a discoverer certainly, but as a teacher and interpreter of nature's laws. No one, therefore, can be far wrong in recommending a work on Natural Philosophy by Lardner. In the composition of the present work the author has had in view the satisfaction of those who desire to obtain a knowledge of the elements of physics without pursuing them through their mathematical consequences and details. The methods of demonstration and illustration have accordingly been adapted to such readers. The work has been also composed with the object of supplying that information relating to physical and mechanical science which is required by the engineer, the artisan, and others such as those who are preparing for the universities, and, in fine, by those who, having already entered upon the active pursuits of business, are still desirous to sustain and improve their knowledge of the general truths of physics and of those laws by which the order and stability of the material world are maintained. The second course will contain heat, electricity, magnetism, and astronomy.

As a specimen of the work we may quote a portion of the author's remarks on the strength of materials:—

"*Strength of a beam increased by partially sawing it transversely and inserting a wedge.*—According to Peschal, the transverse strength of a beam of timber may be greatly increased by sawing down from one-third to one half of its depth, and driving in a wedge of metal or hard wood until the beam is forced at the middle out of the horizontal line, so as to form an angle presented upwards. It was found by such an experiment that the transverse strength of a beam thus cut to one-third of its depth, was increased one-nineteenth: when cut to one-half of its depth, it was increased one twenty-ninth; and when cut to three-fourths of its depth, it was increased one eighty-seventh.

Why the strength of a structure is diminished as its magnitude is increased.—It follows from the principles which have been explained, that if any structure be increased in magnitude, the proportion of its dimensions being preserved, the strength will be augmented as the squares of the ratio in which it is increased. Thus, if its dimensions be increased in a two-fold proportion, its strength will be increased in a four-fold proportion; if they be increased in a three-fold proportion, its strength will be increased in a nine-fold proportion, and so on. But it is to be considered, that, by increasing its strength in a two-fold proportion, its volume, and consequently its weight, will be increased in an eight-fold proportion; and by increasing its dimensions in a three-fold pro-

no tile to be used should have a curve or bend of less than one quarter of an inch in the length of the tile, or be bedded and jointed otherwise than as described, tile-makers would soon find it to be to their advantage to make them of the required shape. The tiles are supposed in this statement to be 10 in. by 6 in.

Concerning the execution of ornamental tiling in lozenge or chequered patterns of various colours, which is now being used in some places, this is very liable to have some defects, but by a little previous care and attention they may be avoided.

The workman should commence the laying of the tiles at the hips and valleys, and continue along to the gables, where it may terminate as it happens, as it is of less importance to have the figures there incomplete than at the hips and valleys.

Where the work terminates at both ends by hips or valleys, the workman should ascertain, in the first place, whether the figures will come all in of their proper sizes or not: if not, then the borders at the terminations could be widened, or the one least exposed to view could be made narrower, so as to meet the requirements of the case; but on no account should it be left to turn out at random, as there will be as much difference in the effect of the work being finished properly or improperly, as there would be in the appearance of a garment made and fitted properly for the use of the wearer, and one made at random, having the nooks and corners cut off afterwards to fit it for the same purpose.

When the roof is of a high pitch, with any intersections, the tiles will require to be made longer or narrower, to suit the pitch, as the height of it, and, consequently, the angle of the intersecting line, regulates the shape of the figure of the tiling, which will be longer in proportion to its width, the higher the pitch of the roof may be; and as it is essential that each tile should have at least two inches lap, the difficulty will perhaps be easiest overcome by this expedient. The half-pitch roof will require a gauge of about 4¼ in., so that the common-sized tiles will answer the purpose for it.

A. PATERSON.

THEATRES AND SCENERY.

Her Majesty's Theatre.—"Il Prodigo," the *Enfant Prodigue* of Scribe, and the "Azael" of Drury-lane, has been produced here with a *mise en scène* (as the French call it) of extraordinary splendour and beauty. With pretty music, picturesque groups, gorgeously attired, filling the scene, and novel and exciting dances, it cannot fail to draw large houses. As an instance of rapid production it is very remarkable: one of the principal scenes in Memphis was begun and finished, we are told, on the day on which the opera was first represented. The costume of Massol, who, as Reuben, sings touchingly, is worthy of an artist.

The Royal Italian Opera House.—The revival of the favourite here has brought back some beautiful scenery to the stage of the Italian Opera House; for example, the vaulted Moorish loggia at the end of the first act and beginning of the second, decorated with mosiac work, and showing in the back ground gardens and residences. The last scene, the interior of a ruined monastery, is exquisitely beautiful in effect, though not without solecisms architecturally. Grisi, Mario, and Tamberlik have the chief parts in this opera, and sing them finely. The crowds now in London begin to tell in other places besides the park, and no where more than here. On Saturday in last week, when the Queen ordered *Don Giovanni*, every inch in the theatre was occupied.

The Lyceum Theatre.—The revival of Mr. Planché's smart little comedy, "The Court Beauties," with all its pristine elegance in costume and "getting up," was *à propos* of the Queen's ball. To those who appreciate close adherence to truth in time and circumstance, and refinement in every detail, it will afford a great treat. Mr. Charles Matthews seems to delight in the sparkling impudence of Buckingham, and emulates the character by his consummate acting. The regal ease with which Mr. Vining assumes Charles II., the unction of Mr. Roxby in the happy illustration of an empty-headed conceited courtier of the time, and the irresistibly comic humour of Mr. Frank Matthews, as old miserly Sir John Hunks, are admirable studies. As for the representatives of the "Beauties," they would have made old Sir Peter Lely stare, for we doubt if the originals were half so charming: great artistic pains and skill are evinced in their arrangement.

DRAIN-PIPES GLAZED AND UNGLAZED.

AT page 352 of THE BUILDER (Vol. IX.) I observe some remarks as to glazing drain-pipes for sanitary purposes.

I approve of the remarks that are made relative to the glaze not adding at all to their durability, as I have discovered in the course of my sewering operations vast quantities of Roman and ancient British pottery, the unglazed being quite as sound and good as the glazed after being buried beneath the surface of the ground, even in damp and wet situations, for at least fourteen centuries.

In some portions of the Roman pottery (Samian ware) that I have found, the glaze is chipped off in places, and the Roman drain-pipes or tiles are not glazed at all. Mr. Austin, in his evidence before the Metropolitan Sanitary Commission (page 126 of report), says:—"The drain-pipes of ancient Rome are at the present day perfect, although of far inferior material to the vitrified glazed stone ware now manufactured in this country" (which I very much doubt).

"At the ruins of Trajan's bath," (erected A.D. 110), "near Civita Vecchia, I recently examined some of these pipes, which are still perfect," a strong argument of their durability even without the glaze so strongly insisted on by some parties.

I think if the manufacturers, instead of paying so much attention to glazing their pipes, would endeavour to perfect them in quality of material, strength, shape, and uniformity, and burn them well,—in fact turn out a perfect article, which, I am sorry to say, is not generally the case,—a greater benefit would be conferred upon the public.

If the manufacturers burned a perfect article, correct in contour, perfectly straight, and made it to fit truly at the joints, we should hear little of the "cuckoo cry" of *glazed pipes*, because we should have conduits quite as smooth as the interior surface of iron pipes, and capable of discharging as much fluid, and all that would be required would be care in laying them so as to give them a *sufficient* inclination to discharge the sewage.

I believe the introduction of glazed pipes, like the modern plan of flushing sewers, to be nothing more than a weak attempt to support a "rotten" system of town drainage.

BAYLIS.

DISCOVERY OF A CRYPT UNDER DEANERY HOUSE, WATERFORD.

AT a meeting of the Kilkenny Archæological Society, held on the 7th, the Dean of Waterford made a communication on the above, from which we take the following. It was always known, the Dean said, that a large vault existed beneath the Deanery House at Waterford; but it was never explored, nor was it known how far it extended. On coming to reside here, I found this an object of interest to the antiquary, and proceeded to explore and re-open the Crypt.

At the commencement, we found the end of the Crypt filled with rubbish, so that no more than two-thirds of its entire extent was visible, and all was darkness, no ray of light being admitted into it. On removing some of the rubbish, there was discovered at the extreme end (the south), a pointed-arch doorway, and on proceeding with the work, this was found to lead to a spiral stair. Proceeding up these stairs, we found ourselves in an apartment adjoining the coach-house, the entire staircase having been filled up with rubbish, and part of the offices built over it (the present Deanery, &c., was erected about 150 years since). Having removed the building, the staircase was made to open into the garden. This was evidently the stair of a round tower, leading to the upper story of the ancient buildings.

The whole length of this crypt is 60 feet—the breadth, which is uniform, 19 feet. The arch of the vault is a semicircle, and the whole is supported, and divided into two equal aisles, by "massive arches, broad and round," springing from

> "Ponderous columns short and low;"

evincing the character of the original building, when, like that of Lindisfarne,

> "In Saxon strength the abbey frown'd."

The counter arches are semicircular, springing from pillars, square but chamfered at the corners. Of these pillars there are five distinct, and two pilasters, forming six arches, running from north to south. The height of the crown of the arch is 11 feet; that of the pillars 6 feet 2 inches; the distance between the pillars 8½ feet. The entrance at the east side is 5½ feet wide. From floor to threshold of this entrance are five steps of 9-inch risers; and from thence to the original level are five steps more.

The spiral stair at south end is 8½ feet in diameter, and consists of twenty-one winding steps of 6-inch risers. The pointed door-arch at foot of stairs is 7 feet to the point of arch. The window of stairs is 3 feet below the present exterior level.

The greater part of the pillars and the entire of the pointed door-arch are built of a white soft stone, which I believe to be Caen stone: the rest is of native limestone, beneath the outer surface, at the west side,—some at the end of the east side. It is probable that the crypt extended further, but was cut off to erect the deanery at one end, and the Town Hall at the other.

A second vault, hitherto used as a coal cellar, extends from the northern end of the crypt above described—which is curious, as containing in the roof large quantities of the *hurdle*, used for the centreing of the arch in the original building of the edifice. In a brick partition dividing off a wine cellar in this vault, I found, built up and plastered over as part of the partition, a finely carved piece of oak, apparently part of an altar-screen, measuring seven feet by twenty inches—in good preservation.

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On the subject of the pyramids, of course, the author gives his peculiar views. "It has been supposed," he remarks, "that each pyramid was the tomb of a sovereign or sovereigns, and that all the pyramids were built before the Shepherd invasion, being the tombs of successive kings. It is enough to remark that ancient authority, the evidence of the monuments, and the relative positions of pyramids, are against this theory; and the monuments distinctly show that contemporaneous kings were buried in the pyramids around Memphis."

Hand-Book of Natural Philosophy and Astronomy. By DIONYSIUS LARDNER, D.C.L., formerly Professor of Natural Philosophy and Astronomy in University College, London. First Course—Hydrostatics—Hydraulics — Pneumatics — Sound —Optics, with upwards of four hundred illustrations. Taylor, Walton, and Maberly, Paternoster-row. 1851.

LARDNER and Mechanical Philosophy, though not exactly synonymous terms, have long been associated somewhat as the sublimer subject of Astronomy has been with the name of Herschel; not so much as a discoverer certainly, but as a teacher and interpreter of nature's laws. No one, therefore, can be far wrong in recommending a work on Natural Philosophy by Lardner. In the composition of the present work the author has had in view the satisfaction of those who desire to obtain a knowledge of the elements of physics without pursuing them through their mathematical consequences and details. The methods of demonstration and illustration have accordingly been adapted to such readers. The work has been also composed with the object of supplying that information relating to physical and mechanical science which is required by the engineer, the artisan, and others such as those who are preparing for the universities, and, in fine, by those who, having already entered upon the active pursuits of business, are still desirous to sustain and improve their knowledge of the general truths of physics and of those laws by which the order and stability of the material world are maintained. The second course will contain heat, electricity, magnetism, and astronomy.

As a specimen of the work we may quote a portion of the author's remarks on the strength of materials:—

"*Strength of a beam increased by partially sawing it transversely and inserting a wedge.*—According to Peschal, the transverse strength of a beam of timber may be greatly increased by sawing down from one-third to one half of its depth, and driving in a wedge of metal or hard wood until the beam is forced at the middle out of the horizontal line, so as to form an angle presented upwards. It was found by such an experiment that the transverse strength of a beam thus cut to one-third of its depth, was increased one-nineteenth: when cut to one-half of its depth, it was increased one twenty-ninth; and when cut to three-fourths of its depth, it was increased one eighty-seventh.

Why the strength of a structure is diminished as its magnitude is increased.—It follows from the principles which have been explained, that if any structure be increased in magnitude, the proportion of its dimensions being preserved, the strength will be augmented as the squares of the ratio in which it is increased. Thus, if its dimensions be increased in a two-fold proportion, its strength will be increased in a four-fold proportion; if they be increased in a three-fold proportion, its strength will be increased in a nine-fold proportion, and so on. But it is to be considered, that, by increasing its strength in a two-fold proportion, its volume, and consequently its weight, will be increased in an eight-fold proportion; and by increasing its dimensions in a three-fold pro-

portion, its volume and weight will be increased twenty-seven times; and so on. Thus it is apparent that the weight increases in a vastly more rapid proportion than the strength, and that, consequently, in such increase of dimensions, a limit would speedily be attained at which the weight would become equal to the strength, and beyond this limit the structure would be crushed under its own weight. On the other hand, the more beyond this limit the dimensions of the structure are kept, the greater will be the proportion by which the strength will exceed the weight.

The strength on the large scale not to be judged by that of the model.—The strength of a structure of any kind is therefore not to be determined by its model, which will always be much stronger relatively to its size. All works, natural and artificial, have limits of magnitude which, while their materials remain the same, cannot be exceeded. Small animals are stronger in proportion than larger ones. We find insects and animalculæ capable of bodily activity, exceeding almost in an infinite degree the agility and muscular exertion manifested by the larger class: the young plant has more available strength in proportion than the forest tree.

An admirable instance of beneficence in the consequences of this principle is, that children, who are so much more exposed to accidents, are less liable to injury from them than grown persons."

The Patent Journal and Inventors' Magazine. Vol. X. Charles Johns, Chancery-lane.

WE are glad to see that this useful journal is progressing, and that it still sustains its character. To inventors and to all interested in new inventions it must be valuable for reference as well as for news. One of its latest novelties relates to the patent-specification and special claims of Mr. Paine, the American electrician, only recently published, the report having been delayed at the particular request of the assignee of the patent in England. In his specification the patentee states that "although water has been spoken of as decomposed by the electric currents, he wishes it to be understood that it is merely to accord with the generally received doctrines and phraseology, and that water, after all, may be a simple element." He claims—

"Firstly,—the use of helices, in which are hollow helical coils, to be filled at pleasure either with water or other electrical absorbent. Secondly, the use and construction of the electrodes, as described. Thirdly, the *mode of applying* electricity to the decomposition of fluids by pulsations or intermittent discharges. Fourthly, the construction and use of governors for regulating the electric current, as described. Fifthly, the method of catalizing or rendering hydrogen gas luminiferous, by passing it through spirits of turpentine, or other hydrocarbon at ordinary temperatures. Sixthly, the use of non-conducting pipes and isolated gasometers, for the purpose of conveying and holding the gases for the purposes of this invention."

Miscellanea.

ASSESSING WATER COMPANY'S WORKS TO LAND-TAX.—In the case of *Chelsea Water Works* v. *Bowley*, the Court of Queen's Bench has decided that the company are not liable to be assessed to the land-tax. Lord Campbell said they would have had no difficulty in coming to that conclusion, but for the decisions which had been come to by the Court, that these and similar companies were liable to be assessed to the poor-rate in respect of the land which they occupied. The 4th section of the 38th George III. chap. 5, enacted that all bodies having or holding any land or hereditaments should be liable to be assessed to the land-tax; and the question was, whether the Chelsea Water Works Company, in the enjoyment of the right conferred upon them by the 8th and 9th sections of the 8th George I., chap. 26, of laying down their pipes, could be said to have or hold any land or hereditaments within the meaning of the Land Tax Act, so as to be liable to be assessed to that tax. The right which the company enjoyed was rather in the nature of an easement than the occupation of land or a hereditament. It consisted in the right to convey water through the land of another; and whether the water was conveyed over the surface, or in covered drains, or in pipes, did not signify. The right was not assessible, nor were the pipes. The Land-Tax Act contemplated property which could be let to a tenant, and the 17th section of the Act provided that, though the tenant should pay the tax in the first instance, the amount might be deducted by him out of his rent. The company, however, were not the owners of the land where the pipes passed, and there was no rent out of which, if they were tenants, the amount of the tax might be deducted. The cases of the Bath, Brighton, and Chelsea Waterworks Companies touching the relief of the poor, had been much relied upon, for they were closely in point; but the Court, without overruling those cases, or saying whether or not they had been rightly decided, were of opinion that the word "land" had a different meaning in the statute of Elizabeth from what it bore in the Land-Tax Act.

THE DECIMAL SYSTEM OF MEASURES, &c.—In the last number of your journal, I see allusion made to the system of decimal coinage, weights, and measures, as used in France. In addition to the arguments there used for its adoption, might be added the facility for calculations,—a matter of no small importance to architects and surveyors. The complication of measures, for building works, adds in no small degree to the difficulty of making estimates, &c., in which we have to calculate the price of a foot of brickwork at so much per rod: this, in some parts of the country, is done in a different way, to add to the difficulty: then there is to reduce cube yards into feet; though, perhaps, the greatest trouble of all consists in the troublesome reduction of feet and inches, from its frequency and almost universality: in fact, there is not a decimal in the whole list. The proposition for adopting the decimal system is sensible, especially as from the present time we shall have more communication with foreigners, and it will, in all respects, be desirable in such cases to adopt a convenient standard.—A. J. B.

ENGLISH TENDERS FOR IRISH WORKS.—We have received a statement and complaint made by various respectable Irish ironfounders, to the effect that, although they had tendered for a new bridge of malleable iron to carry the line of the Dublin and Kingstown railway across the river Dodder, and although the plan accompanying the tender of one of the parties was identical with that of an English firm ultimately adopted, while the tender was for a considerably lower sum, with offer of sufficient security for its due execution, one and all of the Irish tenders were rejected; and that this is no mere isolated case, but one of a system by which gross injustice is done to Irish enterprise, and in which the prosperity of every member of the Irish community is more or less directly concerned.

TOWN-COUNCIL PROCEEDINGS.—The surveyorship of the city of Londonderry, with a salary of 150*l.* a year, having been declared, prematurely it would now appear, vacant, advertisements for a new surveyor were issued, and nineteen applicants appeared. The advertisement was published in Belfast and Dublin, as well as Londonderry, and consequently the greater number of the applicants were not Londonderrians. They no sooner responded to the call, however, than they were told that none but a citizen of Londonderry would be elected. The majority, therefore, returned to their respective homes, and five candidates remained, whom Mr. Newlands, the borough engineer of Liverpool, was engaged to examine. The report of Mr. Newlands stated that two of them might do for clerk of works, but these were the *elite* of the lot so far as regarded fitness for a surveyorship, abstractly speaking. The report was publicly read at a council meeting, and a discussion followed thereupon, when it was resolved "to advertise again in Derry, Dublin, and Belfast for a person to fill the office of town surveyor," and that "persons from a distance might rely on receiving the favourable consideration of the council, should their professional qualifications entitle them." A letter was then read from Mr. S. Gordon, urging that he had been appointed city surveyor as well as surveyor for the county, and that as he could not be removed without the sanction of his Excellency the Lord Lieutenant, and as that sanction had neither been sought nor obtained, he conceived that he was still the city surveyor, and that any new election whatever, under the circumstances, would be void and null. Mr. Gordon, it was stated, did not seek compensation: in fact, some of his labours had been taken off by the appointment of a town surveyor without any reduction of *his* salary; but he anticipated such a reduction by the grand jury, and therefore offered to pay 100*l.* to an overseer of works, and still to retain the city surveyorship in his own hands.

RAILWAYS *versus* ROADS.—When we consider the almost total diversion of traffic from off the turnpike-roads of this country, arising from the introduction of railway transit, it is a matter of some surprise, where the capability and power of the locomotive are so well known, that the trustees and others interested locally in the annual repair of such roads, never have, in any single instance, attempted to compete with the great monopoly. The idea has been suggested by several scientific gentlemen, showing the practicability of the scheme, at a very light comparative cost in construction. I, myself, think the project is well worthy of the attention of those more immediately interested. The question of cost may have been an objection, but there are many advantages which would tend materially to promote the enterprise. For instance, there would be no purchase of land, or law or parliamentary charges, added to cheap materials and labour. I am, from my experience, persuaded that the practicability of such is that it only requires an impetus by some influential party to show the necessity of similar modes of travelling. It is well known that, from our present lines of railway, many important towns are wholly destitute of that accommodation which the railway companies assured the public they would afford them: by the introduction of the wooden railway with a light rail and reduced gauge, they would ultimately prove an advantage to the existing lines in drawing the traffic from our lateral towns and villages to their principal stations. The suggestion for such mode of transit is of sufficient importance in itself to engage the attention of those gentlemen locally bound to improve the revenues arising from the various turnpike-roads of this kingdom. No class of men would benefit more than the farmers of this country, who, by adopting the railway at their own door, would reduce their horse-power very considerably.—ALPHA.

YORKSHIRE UNION OF MECHANICS' INSTITUTES.—The fourteenth annual congress of delegates from these associated institutes was held at Leeds on Wednesday in last week, when between seventy and eighty delegates assembled, for the purpose of comparing their experience, so as to enable them to know what are the best means of conducting such institutions, and making them conducive to the welfare of the community. The condition of the institutes this year, as compared with the last, is said to be very gratifying. The following is the state of those institutes whose reports give the means of comparing their condition in 1850 and 1851:—Comparison made with returns from 83 institutes, in 1850,—males, 12,442, females, 991; 1851, males, 13,173, females, 1,054, increase, 794, 5·8 per cent. In 79 institutes the annual income was in 1850, 6,855*l.*; in 1851, 7,426*l.*; increase, 571*l.*; 8·3 per cent. Comparison of 70 institutes for books in the libraries in 1850, 63,294; in 1851, 70,589; increase, 7,295; 11·5 per cent. Comparison of the circulation in 70 institutes, in 1850, 289,271; in 1851, 520,467; increase, 31,196; 10·7 per cent. In 77 institutes—comparison of totals of lectures paid and unpaid, in 1850, 620; in 1851, 715; increase, 85; 9·4 per cent. In 47 institutes, of which the total income was 2,737*l.*, the portion of incomes contributed by those who derived no advantage was 520*l.*, or 19 per cent.

ART-UNION OF GLASGOW.—In the report read at the recent distribution of prizes, it was stated that there had been an increase of 1,224 subscribers over the year preceding. The committee recommended that for the next year the same course should be followed as on that preceding, namely, offering a premium of 50*l.* for the best painting, scriptural, historical, or *genre* from any British artist, and in addition a premium of 25*l.* for the best landscape painting by a British artist. The report also stated that the West of Scotland Academy, following the example of the Glasgow Art-Union, had agreed to give a premium of 10*l.* and a gold medal for the best picture painted in Scotland; also a medal, value 5*l.* for the best picture painted in the West of Scotland.

FOREIGN HARD WOODS.—At the Great Exhibition, in class 1, near the agricultural machinery (south wall), there is a very interesting classification of specimens of foreign hard woods, for cabinet work, turnery, dyeing, and machinery, exhibited by Messrs. Fauntleroy and Sons, of London. It may be usefully studied.

BURY AND WEST SUFFOLK ARCHÆOLOGICAL INSTITUTE.—The institute held its quarterly general meeting lately under the presidency of Mr. C. J. F. Bunbury. A paper by Sir Henry E. Bunbury, Bart., on the nature of the Roman occupation of Icklingham, having been read, Mr. Tymms gave a brief account of the Saxon antiquities found at Stow, showing how they agreed with some peculiarities observable in the remains of the same people discovered in other parts of the kingdom, and calling attention to the singular fact that the spot at Stow, where nought but Saxon remains have been met with, closely adjoins that in the neighbouring parish where only Roman objects are turned up. The meeting went to the church of All Saints, where the fine Early English scroll-work in iron on the church chest, and the decorated chancel pavement, excited particular notice and gave rise to some interesting conversation. After hearing a paper by Mr. E. K. Bennet, they proceeded to the church of St. James, and thence to Mildenhall. Mr. Tymms read a paper descriptive of the fine church of Mildenhall, pointing out its many interesting details.

FALL OF A BUILDING.—A wall of some new buildings in course of erection at Preston, according to the local *Guardian*, lately fell in consequence of five labourers almost simultaneously throwing out their hod loads of bricks, weighing nearly 5 cwt., on the scaffolding in use in the erection of the wall. Several men were seriously injured.

PUBLIC BATHS AND WASHHOUSES AT OXFORD.—On Tuesday in last week, the committee for carrying out the establishment of public baths and washhouses in this city, met for the purpose of opening the estimates for erecting the buildings, in accordance with the design which was selected a short time ago. The tenders were eight in number, and the amounts were as follow:—

Piper, London	£3,279	0	0
Hayward and Nixon, do..	2,870	0	0
Hope, Oxford.....	2,823	3	0
Mary Wyatt, do.....	2,750	0	0
Myers, London	2,695	0	0
Winterborne, Oxford....	2,583	9	0
Castle, do.	2,534	4	10
Plowman, do.....	2,309	0	0

In consequence of all the estimates exceeding the amount which the committee contemplated laying out, no decision was come to.

TENDERS

Delivered for two pair of houses for National Freehold Land Society, at New Maldon, near Kingston. Mr. George Elkington, architect.

Walker and Soper	£1,614
Cooper and Bottomley	1,573
Patman	1,470
Brooks.....	1,437
Brown	1,410
Sewell	1,369
Lugg.....	1,300

For the erection of part of the works of the Catholic Apostolic Church, Gordon-square, London. Messrs. R. Brandon and Co. architects.

	In Horsley Castle Stone.	In Bath Stone.
Kelk.....	£40,549	32,841
Hayward and Nixon.....	34,200	31,700
Piper.....	30,826	27,400
Myers	33,267	27,157

Mr. Myers's tender in Bath-stone accepted.
The quantities were furnished by Mr. Thomas Percy.

TO CORRESPONDENTS.

"Holland *v.* Lord Harborough" (we cannot pursue this matter further), "A Subscriber to the Charity" (we give general principles: we cannot attempt to prescribe for special cases), "T. W.," "J. J. L.," "Johnny," "B. and Co.," "Assistant Clerk" (enquire as to the Architects' Benevolent Institution), "B. P. W.," "A Constant Reader," "F. G. jun.," "G. T." (we do not recognise any novelty in the arrangement), "J. J. L." (Belfast, not desired: the gateway we may perhaps engrave), "J. L.," "W. D.," "J. P.," "Mr. E.," "Mr. H.," "W. P." "W.," "A. H. P.," "Wm.," "J. W.," "One of the Committee," "William" (we are obliged to refuse), "An Old Subscriber," "H. M.," "J. P. H." "E W. S." "The Transept of the Crystal Palace, drawn and engraved (on steel) by John Sadler." Layton, Fleet-street. "A Description of Two Model Farms," &c., at the International Exhibition. Baxter and Son, Lewes. "Illustrations of Mediæval Costume in England." Part IV, Bosworth, Regent-street.

"*Books and Addresses.*"—We have not time to point out books or find addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and *not* to the Publisher.

ADVERTISEMENTS.

PROVIDENT INSTITUTION of BUILDERS' FOREMEN.—NOTICE IS HEREBY GIVEN, that a General Quarterly Court of the Directors of the Provident fund for the relief of aged and infirm Builders' Foremen, will take place at the BAY TREE TAVERN, 88, Swithin's-lane, on Wednesday Evening next, June 25, for the purpose of transacting the ordinary business of the Quarter.
W. ALLARD, Secretary.

TO CARPENTERS.

WANTED, to place a respectable Youth, 16 years of age, as IN-DOOR APPRENTICE. A moderate premium will be given.—Address, A. Z., 5, Hertford-road, Kingsland.

WANTED, by a Gentleman in the country, for a permanency, a first-rate three-branch hand, as a PLUMBER, PAINTER, and GLAZIER. None need apply without reference.—Address to A. B., Mr. Noble's, 5, Down-street, Piccadilly, London.

TO SURVEYORS AND LEVELLERS.

WANTED, a SURVEYOR, used to Plan taking in Towns, who is a good plain draughtsman, and writes a good plain hand; and also a good LEVELLER, one accustomed to mine surveying and levelling would be preferred.—Apply by letter, prepaid, to A. B., care of Housekeeper, Old Jewry Chambers.

WANTED IMMEDIATELY, THREE first-rate FOREMEN of JOINERS, BRICKLAYERS, and MASONS, fully competent to superintend works under the direction of the Clerk of the Works.—Apply by letter, stating where last engaged, and salary required, to J. B. H., Newby Wiske, near Thirsk, Yorkshire.

TO BUILDERS, PLUMBERS, &c.

WANTED, by a Young Man, a permanent SITUATION as PLUMBER; no objection to fill up his time in the zinc work.—Address X. Y., No. 20, Caroline-street, Arlington-street, Camden-town.

TO BUILDERS' FOREMEN.

WANTED, a Respectable Person (Carpenter and Joiner) to superintend generally a job in London, where about thirty men will be engaged.—Address, M. P., Miller and Field's, Bridge-road, Lambeth.

TO MASTER PAINTERS, GENTLEMEN, AND OTHERS.

WANTED, by a Married Man, aged 34, a SITUATION as PAINTER, GLAZIER, &c., &c., in Town or Country, or on a Gentleman's Estate.—Direct Y. Z., Mr. Chapman, 10 a, Leander-street, Chelsea.

TO ARCHITECTS AND SURVEYORS.

WANTED, by the Advertiser, a re-engagement as ASSISTANT; he perfectly understands surveying and levelling, and is a neat and expeditious draughtsman. Satisfactory references will be produced.—N.B. No objection to the country.—Address, G. E. F., 9, Grove-terrace, Turnham-green.

TO ARCHITECTS, CIVIL ENGINEERS, AND BUILDERS.

WANTED, by the Advertiser, EVENING EMPLOYMENT in making copies or tracings of drawings, or copying specifications, &c. Terms very moderate.—Address, by letter, to Z. Y., Office of "The Builder," 1, York-street, Covent-garden.

TO DISTRICT SURVEYORS.

WANTED, by a Person who has lately left an Architect and District Surveyor's office, an ENGAGEMENT in a similar capacity. Can have a six years' testimonial and give most respectable references.—Address, free, to S. W., Post-office, Hackney, Middlesex.

TO PLASTERERS.

WANTED, at Newcastle-on-Tyne, a steady industrious MAN, who has been accustomed to shop work, to whom constant employment will be given. No applications will be attended to unless accompanied with a reference as to character and ability.—Apply to W. B. WILKINSON, Plasterer, &c., Newcastle-on-Tyne.

TO SURVEYORS, CONTRACTORS, BUILDERS, &c.

THE Advertiser, who has had many years' experience in office work, practical construction, measuring, valuing and estimating, also superintending extensive works, is desirous of an ENGAGEMENT. Satisfactory references will be given; no objection to the country.—Address, A.B., at No. 10, Rolls-buildings, Fetter-lane.

TO LANDED PROPRIETORS, ARCHITECTS, AND OTHERS.

AN EXPERIENCED SURVEYOR and DRAUGHTSMAN, accustomed to lay out building land, furnish designs, specifications, estimates, to superintend, measure, and value works, to survey dilapidations, and who is also a good accountant, wishes for an ENGAGEMENT as Assistant or Manager, or upon the estate of a gentleman where architectural and building experience is required.—Address L. M. N., 97, Upper Seymour-street, Euston-square, London.

TO ARCHITECTS AND BUILDERS.

A BUILDING SURVEYOR, of very considerable experience in all the departments, an excellent judge of the value of works, having a most extensive knowledge of all kinds of prices, prime cost and otherwise, would be happy to arrange with any Architect or Builder, to take up the Surveying branch of their business, or to offer his services on occasions. He is also a most expert hand at estimating, furnishing working drawings, &c. The advertiser's time being only partially engaged, he seeks for further occupation of the same.—Address by letter only in the first instance, to M. R., Office of "The Builder," York-street, Covent garden, London.

TO BUILDERS.

AS MANAGER or SURVEYOR, &c., a person of great practical knowledge and many years' experience, offers his services either occasionally or permanently.—Address A. G., No. 68, Charrington-street, St. Pancras-road.

TO BUILDERS AND PLUMBERS.

A PLUMBER in want of EMPLOYMENT—one that well understands all branches of his business. Can do painting and glazing if required. Satisfactory references can be given.—Address, W. L., 45, Clarence-gardens, Regent's-park.

TO PLUMBERS, &c.

A YOUNG MAN, who has served his time, wishes to place himself with a person for IMPROVEMENT. Wages no object.—Address (prepaid), P. S. V., Office of "The Builder," 1, York-street, Covent Garden.

TO ARCHITECTS AND OTHERS.

AN ENGAGEMENT is required by a quick and experienced DRAUGHTSMAN, well acquainted with Gothic, the revived styles of architecture, specifying, superintendence of works, and measuring. Terms, reasonable.—Apply, free, to B. A., Mr. Reffell's, 14, Great Portland-street, Cavendish-square.

TO BUILDERS AND MERCHANTS DEALING IN BUILDING MATERIALS.

A MIDDLE-AGED MAN, who is well experienced in the routine of a Builder's office, is desirous of meeting with EMPLOYMENT, at a moderate salary. An acquaintance with accounts and business generally would render his services available in various lines connected with the building business. He would be able to produce a satisfactory testimonial as to character, &c., from his last employer, his engagement with whom was of several years' standing.—Address, H. W. H., at Mr. Davis's, No. 5, King's-row, Pimlico.

EASTERN COUNTIES RAILWAY.—The Directors are prepared to receive TENDERS for LOANS for periods of three, five, or seven years. All applications to be addressed to the undersigned. In consequence of the recent alteration in the Stamp Laws, sums not less than 100*l.* will now be received by this Company.
By order,
C. P. BONEY, Sec.
Bishopsgate Station, May 29, 1851.

TO NAPHTHA DISTILLERS.

WANTED, TENDERS for the purchase of all the TAR made at the GREAT CENTAL GAS WORKS, Bow-common, during the ensuing six or twelve months (being about 360,000 gallons per annum). Tenders addressed to the Superintendent, Bow-common, will be opened on the 27th June next.

TO ARCHITECTS.

COMPETITION and other DRAWINGS.—Mr. THOMAS S. BOYS, Member of the New Society of Painters in Water Colours, and author of "The Picturesque Architecture of Paris, Ghent, Rouen, &c.," and of "London as it is," offers his services in Tinting Backgrounds, Landscapes, Perspective Views, Interiors, &c. From the long experience he has had in such subjects, he is fully aware of the points essentially necessary to be attended to. Drawings and designs lithographed in a superior manner.—Address, Mr. BOYS, 24, Albany-street, Regent's-park.

DECORATIVE PAINTING.—Mr. FREDERICK SANG, from the Royal Academy of Munich, DECORATIVE ARTIST in FRESCO, and in all other manners of Painting; whose works may be seen in the principal public buildings of the metropolis, begs to inform his patrons, and Architects in particular, that he has considerably increased his Establishment, and is now enabled to undertake, on the shortest notice, the embellishment of private and public buildings, in any part of the United Kingdom, on the most reasonable terms, and in any of the Classical, Mediæval, or Modern Styles.—Apply to F. SANG, Decorative Artist, 38, Pall-mall, London.

ALTAR and COMMUNION CLOTHS, ECCLESIASTICAL CARPETS, CHURCH DECORATIONS, ROBES, &c.—HARRISON, 21, Brownlow-street, Bedford-row, London.—Decorations from the most simple to the most elaborate designs, at moderate prices.

BILLS of QUANTITIES.—DAY & SON, Lithographers to the Queen.—Lithograph Bills of Quantities with the greatest despatch, and at a vast saving on the prices generally charged.
17, GATE-STREET, LINCOLN'S-INN-FIELDS.

TO BRICKLAYERS.

MR. ROBERT TEBBITT, Builder, Soham, Cambs., wishes to dispose of his Bricklayer's business.—For particulars inquire of R. T. A premium will be required.

SUB-MARINE TELEGRAPH COMPANY between ENGLAND and FRANCE.—NOTICE IS HEREBY GIVEN, that APPLICATIONS for SHARES in the SUB-MARINE TELEGRAPH COMPANY will only be received until TUESDAY, the 24th day of June, 1851; after which day the lists will be closed, and the allotment forthwith made.—Dated the 17th June, 1851.

THE SUB-MARINE TELEGRAPH COMPANY between ENGLAND and FRANCE.—Under a decree of the French Government conferring exclusive privileges. Incorporated by Royal Charter. Capital, 100,000*l.*, in 100,000 shares of 1*l.* each. To be paid up without further liability.

TRUSTEES.
Sir Claude Scott, Bart. | Thomas Hankey, Esq.

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The Right Hon. the Lord DE MAULEY, Chairman.
Arthur Anderson, Esq., M.P., Director of the Peninsular and Oriental Steam Navigation Company.
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ENGINEERS—Charlton J. Wollaston, Esq., and T. R. Crampton, Esq.
BANKERS—London: Sir Claude Scott, Bart., and Co. Cavendish-square; Messrs. Hankey, Fenchurch-street. Paris: M. Ferrere-Laffite, Rue Laffite; M. M. Rothschild.
SOLICITORS—Messrs. Davies, Son, and Campbell, Warwick-street, Regent-street.
SECRETARY—T. Griffin, Esq.
OFFICES—9, Moorgate-street.

Copies of the prospectus may be obtained, and applications for shares, in the following form, may be made at the offices of the Company, or of Messrs. Davies, Son, and Campbell, Solicitors, 17, Warwick-street, Regent-street; of Messrs. Carden and Whitehead, 2, Royal Exchange-buildings; and Messrs. Lowndes and Surgey, 1, Royal Exchange-buildings.

FORM OF APPLICATION FOR SHARES.

Gentlemen—I have to request that you will allot to me —— shares, of 1*l.* each, in the Sub-Marine Telegraph Company; and I hereby agree to accept and to pay for the same, or for so many shares as shall be allotted to me, immediately upon the allotment thereof; and, on notice from the Secretary, to execute the deed of settlement, to be prepared in accordance with the Royal Charter incorporating the said Company.

Name.....
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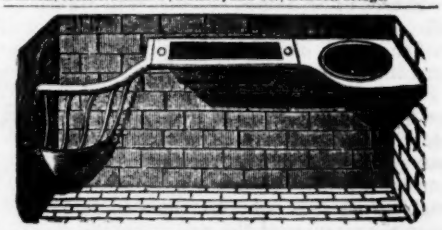

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